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US Army Corps
of Engineers
Savannah District

HARTWELL LAKE PROJECT
Savannah River, Georgia And South Carolina

**REHABILITATION OF
CLEMSON UPPER DIVERSION DAM**
CONTRACT NO. DACW21-83-C-0066
CONSTRUCTION FOUNDATION REPORT

VOLUME 2 OF 2

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AUGUST 1989

U.S. ARMY ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

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HARTWELL LAKE PROJECT
SAVANNAH RIVER, GEORGIA AND SOUTH CAROLINA
REHABILITATION OF CLEMSON UPPER DIVERSION DAM
CONTRACT NO. DACW21-83-C-0066
CONSTRUCTION FOUNDATION REPORT

In Two Volumes

VOLUME II - APPENDICES B THRU E

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August 1989

U.S. ARMY ENGINEER DISTRICT, SAVANNAH
CORPS OF ENGINEERS
SAVANNAH, GEORGIA

APPENDICES

(Volume II)

<u>Appendix</u>	<u>Title</u>	<u>Page</u>
B	Boring Logs - "New Piezometers"	B-1
C	Concrete Quality Control - Core Boring Logs	C-1
D	Piezometer Plots	D-1
E	Inclinometer Plots	E-1

REHABILITATION OF CLEMSON UPPER DIVERSION DAM
CONSTRUCTION FOUNDATION REPORT

APPENDIX B

Boring Logs - "New Piezometers"

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 677.3'		Hole No. PC-201A		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 2 OF 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
647.3'	30'	c	d	e	f	g
	35		(SM) Continued Brown, tan, & reddish-brown, fine to med. grained, micaceous silty SAND.			
	40					Random Backfill
	45					
	50					
	55					
	60					
	65					
607.3'	70		Tan w/some gravel. Continued on sht 3			
						3/4" SCH 40 PVC RISER
						66.5'
						Bentonite Seal

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		677.3'		Hole No.		PC-201A	
PROJECT			INSTALLATION			SHEET		3	
Clemson Upper Diversion Dam			Hartwell Lake			OF 3		SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.) g			
607.3'	70'	c	d						
			(SM) Continued Tan, fine to med. grained silty SAND. With some gravel.			Bentonite Seal 72.0'			
600.8'	75'					Sand Backfill 76.0'			
			(GM) Tan silty sandy CP AVEL.			78.0'			
597.3'	80'					2.0' Well screen			
			Bottom of Boring 79.0'						

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Hartwell Lake		SHEET 1 OF 2 SHEETS	
1. PROJECT Clemson Upper Diversion Dam			10. SIZE AND TYPE OF BIT 4x5 1/2" dia bit, 6" rock bit			
2. LOCATION (Coordinates or Station) 11+09, 29' upstream			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Savannah District			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number) PE-201A			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0	
			UNDISTURBED 0			
5. NAME OF DRILLER H. Brown			14. TOTAL NUMBER CORE BOXES 0			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER N/A			
7. THICKNESS OF OVERBURDEN 65.0'			16. DATE HOLE STARTED COMPLETED 11 Jan 1984 12 Jan 1984			
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 677.3'			
9. TOTAL DEPTH OF HOLE 65.0'			18. TOTAL CORE RECOVERY FOR BORING N/A %			
			19. SIGNATURE OF INSPECTOR Thaddius Zielonka, Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
677.3'	0'	c	d	e	f	g
666.8'	5		Riprap	10.5'		
	10		(SM) Brown & reddish brown fine to med.grained mica-ceous silty SAND.			Cement Bentonite Grout
647.3'	15					
	20					
	25					
	30					
			Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 677.3'		Hole No. PE-201A		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 2 OF 2 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.)
677.3'	10'	c	d	e	f	g
	35		(SM) Continued Brown & reddish-brown, fine to med. grained micaceous silty SAND.			
	40					
	45					
	50					
	55					
	60					
	65					
612.3			Bottom of Boring 65.0'			

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT 4X5 1/2" dia bit, 5" rock bit			
2. LOCATION (Coordinates or Station) Sta. 11+00, 29' Upstream				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number)		PF-201A		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 14	UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss				14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER N/A			
7. THICKNESS OF OVERBURDEN 79.5'				16. DATE HOLE STARTED 14 Dec 1983 COMPLETED 17 Dec 1983			
8. DEPTH DRILLED INTO ROCK 13.5'				17. ELEVATION TOP OF HOLE 677.3'			
9. TOTAL DEPTH OF HOLE 93.0'				18. TOTAL CORE RECOVERY FOR BORING 60.0 %			
				19. SIGNATURE OF INSPECTOR Thaddius Zielonka, Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
677.3'	0'	c	d	e	JAR	f	
			Riprap			X X X Random Backfill	
666.3'	10'		(SM) Light reddish-brown, fine-med. micaceous silty SAND. With trace of fine gravel.		1	X X X	
			Color change to light brown.		2	X X X	
	15'		Light reddish-brown & fine grained w/no gravel below 15.0'.		3	X X X	
			Color change to red-brown.		4	X X X	
	20'		Color change to tan-brown.		5	X X X	
631.3'	25'		No Recovery (Hit rock).			X X X	
630.3'			(SM) Peddish-brown fine grained micaceous silty SAND. With trace of med. sand.		6	X X X	
647.3'	30'		Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			X X X	
						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".	

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

677.3' MSL

Hole No.

PF-201A

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 2

OF 3 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER ERY	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS
647.3'	30	c	d	e			
			(SM) Red-brown fine grained micaceous silty SAND.		7	x	26
			Tan-brown below 33.0'.			x	25
	35				8	x	26
						x	29
	40		Red-brown fine to med. grained micaceous silty SAND. With trace white weathered feldspar grains (kaolinite).			x	30
					9	x	38
	45					x	26
						x	36
	50		Light brown w/trace fine gravel.		10	x	24
						Random Backfill	3
			Color change to red-brown.			x	28
	55					x	54
			With trace of white weathered feldspar grains below 57.0'.		11	x	37
	60					x	37
						x	25
						x	28
	65				12	x	32
			Tan fine to med. silty sand w/some gravel.			x	41
						x	30
607.3'	70				13	x	27

Continued on sht 3

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT 4X5 1/2" dia. 6" rock bit,			
2. LOCATION (Coordinates or Station) Sta. 11+00, 29' Upstream				11. DAYUM FOR ELEVATION SHOWN (TBA = MSL) MSL			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number) PF-201A				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 14	UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss				14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER N/A			
7. THICKNESS OF OVERBURDEN 79.5'				16. DATE HOLE STARTED 14 Dec 1983 COMPLETED 17 Dec 1983			
8. DEPTH DRILLED INTO ROCK 13.5'				17. ELEVATION TOP OF HOLE 677.3'			
9. TOTAL DEPTH OF HOLE 93.0'				18. TOTAL CORE RECOVERY FOR BORING 60.0' %			
				19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
677.3'	0'	c	d	e			g
			Riprap				NOTE: Riprap cored using 4X5 1/2" dia bit & starter barrel.
	5						
	10						
668.8'			(SM) Light reddish-brown, fine-med. micaceous silty SAND. With trace of fine gravel.		1		
			Color change to light brown.		2		
	15		Light reddish-brown & fine grained w/no gravel below 15.0'.		3		
			Color change to red-brown.		4		
	20		Color change to tan-brown.		5		
			25.5'				
651.8'	25		No recovery. (Hit rock)				
			27.0'				
650.3'			(SM) Reddish-brown fine grained micaceous silty SAND. With trace of med. sand.		6		
	30						
647.3'							100/0.3
Continued on sht 2				BLOWS PER FOOT:			
NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.				Number required to drive 1 3/8" IF splitspoon w/ 140 lb. hammer falling 30".			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 677.3'		Hole No. PF-201A		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 2 OF 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.) g
647.3'	30'	c	d			BLOWS
			(SM) Continued. Red-brown fine grained micaceous silty SAND.		7	26
			Tan-brown below 33.0'.		8	25
	35					26
						29
						30
	40					40
			Red-brown fine to med.grained micaceous silty sand w/trace of white wea.feldspar grains (kaolinite).		9	30
						29
	45					38
						26
						36
						34
	50				10	27
			Light brown w/trace of fine gravel.			43
						63
	55		Color change to red-brown.			51
						28
			With trace of white wea. feldspar grains below 57.0'.		11	54
						37
	60					37
						25
						28
	65				12	32
						41
			Tan fine to med.silty sand w/some gravel.		13	30
607.3'	70					21
			Continued on sht 3			29

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.			
		677.3'		PF-201A			
PROJECT			INSTALLATION		SHEET		
Clemson Upper Diversion Dam			Hartwell Lake		3 OF 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS
607.3'	70'	c	d	e	f	g	
			(SM) Continued. Tan, fine to med. grained silty SAND. With some gravel.		13		35
							28
	75					NOTE: Scale change @ 80.0'	21
600.8'				76.5'			59
			(GM) Tan silty sandy GRAVEL.		14		54
597.8'				79.5'			75
	80		(GRANITE GNEISS) Intensely wea., soft, tan to orange-brown w/some white to light grey zones, fine to coarse grained, micaceous, foliated.	71.1%	Box 1	Pull #1 From 79.5' To 85.1' Run 5.6' Rec 0.4' C.L. 5.2'	
	82			RQD 0.0%			
	84						
592.2'			(GRANITE GNEISS)				85.1'
				92.3%		Pull #2 From 85.1' To 86.4' Run 1.3' Rec 1.2' C.L. 0.1'	
	86		(GRANITE GNEISS)	RQD 65.0%			
590.9'						Pull #3 From 86.4' To 89.1' Run 2.7' Rec 2.6' C.L. 0.1'	
	88			96.3%			
				RQD 48.0%			89.1'
588.2'			(GRANITE GNEISS)			Pull #4 From 89.1' To 93.0' Run 3.9' Rec 3.9' C.L. 0.0'	
	90			100%			
				RQD 82.0%			
584.3'	93		Bottom of Boring 93.0'			NOTE: Scale change 90.0'	

B-12

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT 6X7 3/4" dia, 6" fishtail			
2. LOCATION (Coordinates or Station) 6+05, 30' Upstream				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number)		PC-205A		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 0 UNDISTURBED 0	
5. NAME OF DRILLER H. Brown				14. TOTAL NUMBER CORE BOXES 0			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER N/A			
7. THICKNESS OF OVERBURDEN 79.5'				16. DATE HOLE STARTED 2 Feb 1984 COMPLETED 3 Feb 1984			
8. DEPTH DRILLED INTO ROCK 1.5'				17. ELEVATION TOP OF HOLE 677.0'			
9. TOTAL DEPTH OF HOLE 81.0'				18. TOTAL CORE RECOVERY FOR BORING N/A %			
				19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
677.0'	0'	c	d	e	f	g	
	5		Riprap			+ + + + +	
	10					+ + + + +	
667.0'	10					6" Hole Dia.	
	15		Embankment.			+ + + + +	
	20					+ + + + +	
	25					+ + + + +	
647.0'	30					+ + + + +	
			Continued on sht 2				
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.				

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		677.0'		Hole No.		PC-205A	
PROJECT			INSTALLATION			SHEET			
Clemson Upper Diversion Dam			Hartwell Lake			2 OF 3 SHEETS			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)			
647.0'	30'	c	d	e	f	g			
			Embankment Continued.			+			
	35					+			
						+			
	40					+			
						+			
635.0'			(SC) Red-brown fine to med. grained micaceous clayey SAND.			+			
	45					+			
						Cement Bentonite Grout			
629.0'			(SM) Brown fine to med. grain- ed micaceous silty SAND. With minor clay.			+			
	50					+			
			Color change to reddish- brown.			+			
	55					+			
			Color change to light brown.			+			
	60					+			
			Color change to dark grey.			+			
			Dark grey and fine grained.			+			
	65					+			
			Color change to brown.			+			
608.0'			(ML) brown micaceous lean SILT.			+			
607.0'	70					+			
			Continued on sht 3						

3/4" SCH 40 PVC RISER

B-14

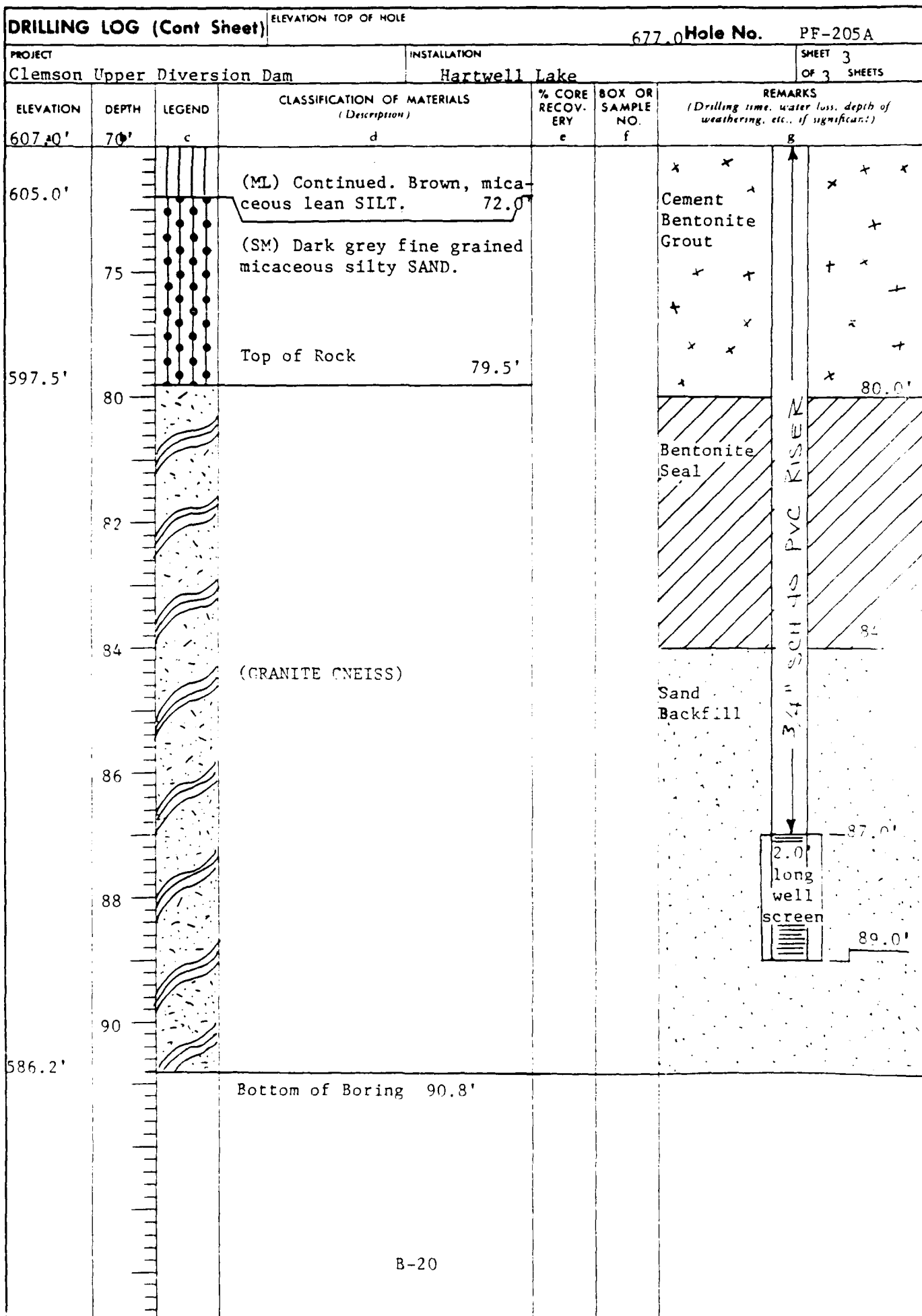
DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 677.0'		Hole No. PC-205A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 3 OF 3 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.)
607.0'	70'	c	d			
605.0'			(ML) Continued Brown micaceous lean SILT. 72.0'			Cement Bentonite Grout 72.0'
	75		(SM) Dark grey fine grained, micaceous silty SAND.			Bentonite Seal 76.0'
			Top of Rock 79.5'			Sand Backfill 78.0'
597.5'	80		(GRANITE GNEISS)			2.0' Well screen 80.0'
596.0'			Bottom of Boring 81.0'			

[illegible]



DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 3 SHEETS	
1. PROJECT		South Atlantic		Hartwell Lake			
Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT 4X5 1/2" dia. 6" rock bit & 6" fishtail			
2. LOCATION (Coordinates or Station)				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
6+00, 30' Upstream				MSL			
3. DRILLING AGENCY				12. MANUFACTURER'S DESIGNATION OF DRILL			
Savannah District				Failing 314			
4. HOLE NO. (As shown on drawing title and file number)		PF-205A		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 7 UNDISTURBED 0	
5. NAME OF DRILLER		H. Brown		14. TOTAL NUMBER CORE BOXES		2	
6. DIRECTION OF HOLE		<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		N/A	
7. THICKNESS OF OVERBURDEN		79.5'		16. DATE HOLE		STARTED 30 Jan 1984 COMPLETED 1 Feb 1984	
8. DEPTH DRILLED INTO ROCK		11.3'		17. ELEVATION TOP OF HOLE		677.0'	
9. TOTAL DEPTH OF HOLE		90.8'		18. TOTAL CORE RECOVERY FOR BORING		%	
				19. SIGNATURE OF INSPECTOR		Thaddius J. Zielonka, Jr.	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
677.0'	0'	c	Riprap				
667.0'	10'		Embankment.				
647.0'	30'		Continued on sht 2				
NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.							

PROJECT		ELEVATION TOP OF HOLE		Hole No.	
Clemson Upper Diversion Dam		Hartwell Lake		PF-205A	
CLASSIFICATION OF MATERIALS (Description)		% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
ELEVATION	DEPTH	LEGEND			
647.0'	30'	c	d	e	f
			Embankment Continued.		
	35				
	40				
635.0'			42.0'		
	45		(SC) Red-brown, fine to med. grained micaceous clayey SAND.		
			48.0'		
629.0'			(SM) Brown, fine to med. grained micaceous silty SAND. With minor clay.		
	50				
			Color change to reddish-brown.		
	55		Color change to light brown.		
	60		Color change to dark grey.		
			Dark grey & fine grained.		
			Color change to brown.		
	65				
			69.0'		
608.0'			(ML) Brown micaceous lean SILT.		
607.0'	70		Continued on sht 3		

B-19



DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT 4X5 1/2" dia. 6" rock bit &			
2. LOCATION (Coordinates or Station) 6+00.30' Upstream				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) 6" fishtail MSL			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number) PF-205A				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 7 UNDISTURBED 0	
5. NAME OF DRILLER H. Brown				14. TOTAL NUMBER CORE BOXES		2	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		N/A	
7. THICKNESS OF OVERBURDEN 79.5'				16. DATE HOLE		STARTED 30 Jan 1984 COMPLETED 1 Feb 1984	
8. DEPTH DRILLED INTO ROCK 11.3'				17. ELEVATION TOP OF HOLE 677.0'			
9. TOTAL DEPTH OF HOLE 90.8'				18. TOTAL CORE RECOVERY FOR BORING		%	
				19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
677.0'	0'	c	d	e	f	g	
	5		Riprap			NOTE: Cored riprap w/ 4X5 1/2" diamond bit Reamed hole w/ 6" rock bit.	
667.0'	10		10.0'				
	15		Embankment.			NOTE: Fishtail - 12.0'	
	20						
	25						
647.0'	30		Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.				

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
		677.0'		PF-205A		
PROJECT		INSTALLATION		SHEET 2 OF 3 SHEETS		
Clemson Upper Diversion Dam		Hartwell Lake				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY e	BOX OR SAMPLE NO f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
647.0'	30'	c	d	e	f	g
			Embankment Continued.			
	35					
	40					
			42.0'			BLOWS
635.0'						
	45		(SC) Red-brown, fine to med. grained, micaceous clayey SAND.		1	
			48.0'			
629.0'						
	50		(SM) Brown, fine to med. grained micaceous silty SAND. With minor clay.		2	
			Color change to reddish- brown.			
	55		Color change to light brown.		3	
			Color change to dark grey.			
	60		Dark grey & fine grained.		4	
			Color change to brown.			
	65					
			69.0'			
608.0'			(ML) Brown, micaceous lean SILT.		5	
607.0'	70		Continued on sht 3			
						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon 140 lb. hammer falling 30'.

B-22

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.			
PROJECT		INSTALLATION		SHEET 3			
Clemson Upper Diversion Dam		Hartwell Lake		OF 3 SHEETS			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER ERY	BOX OR SAMPLE NO	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.)	BLOWS
607.0'	670'	c	d	e	f	g	
605.0'			(ML) Continued. Brown, micaceous, lean SILT. 72.0'		5		17
			(SM) Dark grey, fine grained micaceous silty SAND.		6		18
	75						36
							36
							35
597.5'			Top of Rock 79.5'			NOTE: Scale change @ 80.0'.	40
	80		(GRANITE GNEISS)		7		35
							10040.8
	82					Pull #1 From 81.3' To 86.2' Run 5.1'	
	84						
	86						
	88					Pull #2 From 86.2' To 90.8' Run 3.9'	
	90						
586.2'			Bottom of Boring 90.8'				
	92						

B-23

[illegible]

[illegible]


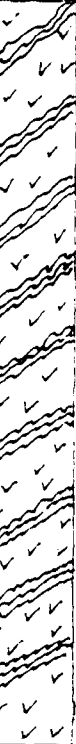
DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
PROJECT		INSTALLATION		SHEET		
Clemson Upper Diversion Dam		Hartwell Lake		3 OF 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.)
607.0'	670'	c	d	e	f	g
596.0'	75	c	(SM) Continued. Brown fine grained micaceous silty SAND.			Cement X Bentonite X Grout X
			Dark grey to black.			Bentonite Seal
			Tan fine to med. grained.			
			With fine & coarse gravel below 79.5'.			Sand Backfill
			Bottom of Boring 81.0'			
	80					2.0' WELL SCREEN

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[illegible]

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT 4X5 1/2", 6" fishtail & 6"			
2. LOCATION (Coordinates or Station) 16+00, 30' Upstream				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) rock bit. MSL			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number)		PF-208A		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 7 UNDISTURBED 0	
5. NAME OF DRILLER H. Brown				14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER N/A			
7. THICKNESS OF OVERBURDEN 82.5'				16. DATE HOLE STARTED 16 Jan 1984 COMPLETED 19 Jan 1984			
8. DEPTH DRILLED INTO ROCK 12.5'				17. ELEVATION TOP OF HOLE 677.0'			
9. TOTAL DEPTH OF HOLE 95.0'				18. TOTAL CORE RECOVERY FOR BORING N/A %			
				19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
677.0'	0'	c	Riprap.			<div style="display: flex; justify-content: space-between;"> X X X X </div>	
	5					<div style="display: flex; justify-content: space-between;"> Cement X </div>	
						<div style="display: flex; justify-content: space-between;"> Bentonite X </div>	
						<div style="display: flex; justify-content: space-between;"> Grout X </div>	
	10					<div style="display: flex; justify-content: space-between;"> X X X X </div>	
						<div style="display: flex; justify-content: space-between;"> X X X X </div>	
						<div style="display: flex; justify-content: space-between;"> X X X X </div>	
	10.0'					<div style="display: flex; justify-content: space-between;"> X X X X </div>	
667.0'	10		Embankment.			<div style="display: flex; justify-content: space-between;"> X X X X </div>	
						<div style="display: flex; justify-content: space-between;"> X X X X </div>	
	15					<div style="display: flex; justify-content: space-between;"> X X X X </div>	
						<div style="display: flex; justify-content: space-between;"> X X X X </div>	
	20					<div style="display: flex; justify-content: space-between;"> X X X X </div>	
						<div style="display: flex; justify-content: space-between;"> X X X X </div>	
	25					<div style="display: flex; justify-content: space-between;"> X X X X </div>	
						<div style="display: flex; justify-content: space-between;"> X X X X </div>	
	30					<div style="display: flex; justify-content: space-between;"> X X X X </div>	
647.0'						<div style="display: flex; justify-content: space-between;"> X X X X </div>	
Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.							

PROJECT		ELEVATION TOP OF HOLE		Hole No.		SHEET	
Clemson Upper Diversion Dam		677.0'		PF-208A		2 OF 3 SHEETS	
INSTALLATION		CLASSIFICATION OF MATERIALS		% CORE RECOVERY		REMARKS	
Hartwell Lake		(Description)		e		(Drilling time, water loss, depth of weathering, etc., if significant)	
ELEVATION	DEPTH	LEGEND	d	e	f	g	
647.0'	30'	c					
			Embankment Continued				
	35						
	40						
	45						
	48.0'						
629.0'	50		(SM) Red-brown fine to med. grained micaceous silty SAND.				
			Color change to brown.				
			Color change to red-brown.				
	55						
	60						
			Brown & fine grained below 60.0'.				
	65						
607.0'	70						
Continued on sht 3							

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		677.0'		Hole No. PF-208A	
PROJECT			INSTALLATION			SHEET 3	
Clemson Upper Diversion Dam			Hartwell Lake			OF 3 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant:)	
607.0'	30'	c	d	e	f	g	
594.5'			(SM) Continued. Brown, fine grained micaceous silty SAND.			x	x
			Dark grey to black.			Cement	x
						Bentonite	
						Grout	x
	75					x	x
				Tan fine to med. grained.			x
				With fine & coarse gravel.			x
	80					x	x
				Top of Rock 82.5'			x
							x
582.0'			(GRANITE GNEISS) Intensely wea., mottled brown, tan, & white, micaceous.			x	x
	85						84.0'
						Bentonite Seal	88.0'
	90						
	92						92.0'
	94					Sand Backfill	94.0'
			Bottom of Boring 95.0'				

3/4" SCH 40 PVC RISER

2.0' LONG WELL SCREEN

B-31

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT 4X5 1/2" dia 6" fishtail &			
2. LOCATION (Coordinates or Station) 16+00, 30' Upstream				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL 6" rock bit			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number)		PF-208A		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 7 UNDISTURBED 0	
5. NAME OF DRILLER H. Brown				14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER N/A			
7. THICKNESS OF OVERBURDEN 82.5'				16. DATE HOLE STARTED 16 Jan 1984 COMPLETED 19 Jan 1984			
8. DEPTH DRILLED INTO ROCK 12.5'				17. ELEVATION TOP OF HOLE 677.0'			
9. TOTAL DEPTH OF HOLE 95.0'				18. TOTAL CORE RECOVERY FOR BORING N/A %			
				19. SIGNATURE OF INSPECTOR Thaddius J. Zielonka, Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
677.0'	0'	c	d	e	f	g	
	5		Riprap.			NOTE: Cored riprap w/ 4X5 1/2" dia. bit. Reamed w/ 6" rock bit.	
	10		10.0'				
667.0'	10		Embankment.			NOTE: Fishtailed to 48.0'.	
	15						
	20						
	25						
647.0'	30						
Continued on sht 2 NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.							

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
PROJECT		INSTALLATION		SHEET 2		
Clemson Upper Diversion Dam		Hartwell Lake		OF 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant:)
647.0'	30'	c	d	e	f	g
			Embankment Continued.			
	35					
	40					
	45					
629.0'			48.0'			BLOWS
	50		(SM) Ped-brown fine to med. grained micaceous silty SAND.		1	
			Color change to brown.			
			Color change to red-brown.		2	
	55					
	60		Brown & fine grained below 60.0'.		3	
	65				4	
607.0'	70		Continued on sht 3			BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE	Hole No.				
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake	SHEET 3 OF 3 SHEETS				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.) g	BLOWS
607.0'	b70'	c		e	f		
			(SM) Continued. Brown, fine grained micaceous silty SAND.				15
			Dark grey to black.		5		36
	75		Tan, fine to med.grained.				32
					6		50
							49
	80		With fine & coarse gravel.				49
			Top of Rock 82.5'				49
594.5'					7	NOTE: Scale change @ 90.0'.	78
			(GRANITE GNEISS) Intensely wea., mottled brown, tan, & white, micaceous.				90
	85						100
							100
	90						100
						Pull #1 From 90.0' To 95.0' Run 5.0' Pec N/A	
	92				Box 1		
	94						
582.0'							
			Bottom of Boring 95.0'				

REHABILITATION OF CLEMSON UPPER DIVERSION DAM
CONSTRUCTION FOUNDATION REPORT

APPENDIX C

Concrete Quality Control - Core Boring Logs

TABLE OF CONTENTS

	Page
Test Panels - CQC boring Logs.....	C-3
Production Panels - CQC Boring Logs.....	C-59

TEST PANELS

CQC Boring Logs

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Hartwell Lake		SHEET 1 OF 9 SHEETS
1. PROJECT Clemson Upper Diversion Dam			10. SIZE AND TYPE OF BIT R Diamond		
2. LOCATION (Coordinates or Station) 4+79.4			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL		
3. DRILLING AGENCY Savannah District			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) T-1-1			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED N/A UNDISTURBED N/A		
5. NAME OF DRILLER C. D. Justiss			14. TOTAL NUMBER CORE BOXES 8		
6. DIRECTION OF HOLE <input type="checkbox"/> VERTICAL <input checked="" type="checkbox"/> INCLINED 1 DEG. FROM VERT.			15. ELEVATION GROUND WATER N/A		
7. THICKNESS OF OVERBURDEN CONCRETE 79.37			16. DATE HOLE STARTED 19 Jan 84 COMPLETED 21 Jan 84		
8. DEPTH DRILLED INTO ROCK 3.78			17. ELEVATION TOP OF HOLE 675.0		
9. TOTAL DEPTH OF HOLE 84.50			18. TOTAL CORE RECOVERY FOR BORING 98.2 %		
			19. SIGNATURE OF INSPECTOR Thaddeus D. Ziehl, Jr.		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
675.0	0	b	c	d	e	f
			CONCRETE			Pull 1
			Machine break @ 0.31.	95.0%		From 0.00 To 1.50
						Run 1.50 Rec 1.33
						CL 0.17 U.L. 0.07
	1		Machine break @ 1.09.			CD 1.40
	2		Machine breaks @ 1.79, 2.01, and 2.24.	100%	Box 1	Pull 2
						From 1.50 To 2.00
						Run 1.40 Rec 1.00
						CG 0.05 U.L. 0.00
	3					CD 2.85
			Mechanical break @ 3.46.	100%		Pull 3
			Machine break @ 3.73.			From 2.90
						To 7.95
						Run 5.05
						Rec 4.80
						CL 0.25
						U.G. 0.03
			Machine break @ 5.43.			
669.0	6		Continued on Sheet # 2.			

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. T-1-1

PROJECT

Glendon Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 2

OF 9 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
669.0			CONCRETE (Continued)			Pull 3 (Continued)
			Machine break @ 6.25.			
	7		Mechanical break @ 6.25.	100%		
			Low angle machine break from 7.16 to 7.26.		Box 1	
			Low angle break from 7.60 to 7.70 at end of pull.			CD 7.62
	8					7.95
						Pull 4
						From 7.95
						To 17.70
						Run 9.75
						Rec 9.27
						CG 0.14
						U.L. 0.04
	9		High angle (approx. 60°) break from 9.02 to 9.40.	99.6%		
	10		Mechanical break @ 10.02.		10.02	
	11					
	12					
	13					
			Mechanical break @ 13.59.			
661.0	14		Continued on Sheet # 3.			

C-5

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. T-1-1		
PROJECT		INSTALLATION		SHEET 3 OF 9 SHEETS		
Clemson Upper Diversion Dam		Hartwell Lake				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
661.02	14.6		CONCRETE (Continued)			Pull 4 (Continued)
	15		Mechanical break @ 15.07.	99.6%		
	16				Box 2	
	17		Mechanical break @ 16.72.			
	17.43		Low angle break from 17.43 to 17.58 at end of pull.			CD 17.55
	18					Pull 5
						From 17.70
						To 27.67
						Run 9.97
						Rec 9.75
						CL 0.22
						U.G. 0.05
	19			100%		
	20		Mechanical break @ 20.02.		20.02	
	21				Box 3	
653.0	22		Continued on Sheet # 4.			
			C-6			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-1-1	
PROJECT Glenage Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
653.0 ^a	22 ^b	c	- d			Pull 5 (Continued)
	23		Mechanical break @ 22.95.	100%		
	24		Low angle break from 23.81 to 23.91.		Box 3	Note: Scale change at 24.00 feet.
	26					
	27		Machine break @ 27.14.			CD 27.25
	28			100%		Pull 6 From 27.67 To 37.30 Run 9.63 Rea 10.00 CG 0.37 U.L. 0.00
	30					
	31		Mechanical break @ 30.88.		30.88	
	32					Note: Scale change at 32.00 feet.
	33		Low angle break from 32.46 to 32.58.		Box 4	
641.0	34		Continued on Sheet # 5.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-1-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 5 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
641.02	34b	c	d CONCRETE (Continued)			Pull 6 (Continued)
	35		Low angle break from 34.57 to 34.67.	100%		
	37				Box 4	
						CD 37.25 37.30
						Pull 7
			Mechanical break @ 38.20.			From 37.30
						To 47.35
						Run 10.05
	39					Rec 9.99
						CL 0.06
				99.9%		U.L. 0.01
	41					
			Mechanical break @ 42.02.			42.02
	43					
	45				Box 5	
			Mechanical break @ 45.67.			
	47					
						CD 47.25 47.35
				100%		Pull 8
						From 47.35
						To 57.27
626.0	49		Continued on Sheet #6.			(Continued)

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-1-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 6 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% COR. RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
626.0*	49b	c	CONCRETE (Continued) — Mechanical break @ 49.15.			Pull 8 (Continued) From 47.35 To 57.27 Run 9.92 Rec 10.07 CG 0.15 U.G. 0.07
	51			100%	Box 5	
	53		— Mechanical break @ 52.81 0.01-0.02' deep pits over 1/8 of core from 52.85 to 53.00.		52.81	
	55		— Mechanical break @ 54.70.			
	57		— Mechanical break @ 56.50.		Box 6	
	59					CD 5725 57.25 Pull 9 From 57.27 To 67.35 Run 10.08 Rec 10.07 CL 0.01 U.G. 0.10
	61		— Mechanical break @ 60.05.	100%		Note: Scale change at 61.00 ft.
	62					
612.0	63		Continued on Sheet # 7.			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE	Hole No.
PROJECT		INSTALLATION	SHEET
Clemson Upper Diversion Dam		Hartwell Lake	7 OF 9 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)
a	b	c	d
612.0a	63b		CONCRETE (Continued)
			% CORE RECOVERY e
			BOX OR SAMPLE NO. f
			REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Pull 9 (Continued)
			Box 6
			63.77
			Mechanical breaks @ 63.77 and 64.62.
			Began to leave Panel T-1 concrete @ 64.70.
			Machine break @ 65.00. Small 1/2" thick piece of concrete separated from main core by break around aggregate from 64.85 to 65.06.
			Began recovery of Panel T-10 concrete @ 65.83.
			Machine breaks in T-10 concrete @ 65.91 and 66.35.
			Machine breaks in both T-1 + T-10 concrete @ 66.62.
			Machine breaks in T-10 concrete @ 66.78 + 66.90.
			Box 7
			-CD 67.22
			Pull 10
			From 67.35
			To 70.35
			Run 3.00
			Rec 2.84
			CL 0.16
			U.L. 0.09
			No recovery of T-1 concrete from 68.87 to 69.37.
			Machine break in T-1 concrete @ 69.72.
			Machine break in T-10 concrete @ 69.74.
			Machine break in T-1 concrete @ 69.89.
			-CD 70.15
			Pull 11
			From 70.35
			To 80.45 (Continued)
604.0	71		Continued on Sheet # 8.
			C-10

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE		Hole No. T-1-1	
PROJECT Glennan Upper Diversion Dam			675.0		INSTALLATION Hartwell Lake	
					SHEET 8 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
604.0 ^a	71 b	c	d	e	f	g
			CONCRETE (Continued)			Pull 11 (Continued)
			- Machine break in T-1 concrete @ 71.01.			From 70.35
			- Recovery of T-1 concrete cores @ 71.37.			To 80.45
			- Machine breaks in T-10 concrete @ 71.48 + 71.99.	94.5%		Run 10.10
	72		- Core totally in Panel T-10 starting @ 72.65.		Box 7	Rec 8.98
			- Machine break @ 72.78.			CL 1.12
	73					u.L. 0.52
			- Mechanical break @ 73.75.		73.75	
	74					
			1/2" deep pits on core from 74.85 to 75.85.			
	75					
			- Machine break @ 75.67. Seam of sand + clay from 75.45 to 75.77.		Box 8	
	76					
			- Machine break @ 76.55.			
	77					
			- Mechanical break @ 77.41.			
	78					
596.0	79		Continued on Sheet #9.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-1-1	
PROJECT Clamson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 9 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
596.02	79b	c	d			
516.6			CONCRETE (Continued) Angular contact at bottom of concrete 79.37	94.5%		Pull 11 (Continued) Note: Approx. 1 ft. void drop from 79.4-80.4.
			CORE LOSS From bottom of concrete to 80.72.			-CD 79.65
594.3			80.72 GRANITE GNEISS Slightly weathered, salt-and- pepper color, slightly foliated.	82.1%	Box 8	Pull 12 From 80.45 To 84.50 Run 4.05 Rec 3.80 CL 0.25 U.L. 0.83
			83.50-84.50 Highly weathered.			
590.5			Bottom of Hole 84.50			-CD 84.28 84.50

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 9 SHEETS
1. PROJECT Clemson Hooper Diversion Dam		10. SIZE AND TYPE OF BIT R Diamond		
2. LOCATION (Coordinates or Station) 4+82 E		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) T-1-2		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED N/A
5. NAME OF DRILLER C.D. Justice		14. TOTAL NUMBER CORE BOXES 8		UNDISTURBED N/A
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER N/A		
7. THICKNESS OF OVERBURDEN CONCRETE		16. DATE HOLE 21 Jan 84		STARTED COMPLETED 23 Jan 84
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE 675.1		
9. TOTAL DEPTH OF HOLE 24.3		18. TOTAL CORE RECOVERY FOR BORING 3		
		19. SIGNATURE OF INSPECTOR Thaddeus J. Zickler, Jr.		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
675.1	0	c	d	e	f	g
			CONCRETE			Pull 1
				98.5%		From 0.00
			Machine break @ 0.67.			To 1.55
	1					Run 1.55
						Rec 1.35
						CL 0.20
						U.L. 0.02
						CD 1.37
					Box 1	1.55
	2			100%		Pull 2
						From 1.55 To 2.77
						Run 1.22 Rec 1.43
						CG 0.21 U.G. 0.00
						CD 2.75 2.77
	3			100%		Pull 3
			Machine breaks @ 3.16, 3.75, 4.18, + 4.67.			From 2.77
						To 7.85
						Run 5.08
						Rec 5.10
						CG 0.02
	5					U.L. 0.00
						Note: Scale change at 3.00 ft.
	7		Mechanical break @ 6.90.			
						CD 7.85 7.85
				100%		Pull 4
						From 7.85
	9					To 17.94 (Continued)
666.1			Continued on Sheet #2.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-1-2	
PROJECT Pomson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 9 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
666.12	9		CONCRETE (Continued)			
	11		Mechanical break @ 10.49.		Box 1 10.49	Pull 4 (Continued) From 7.85 To 17.94 Run 10.09 Rec 10.10 CG 0.01 U.G. 0.05
	13			100%		
	15		Mechanical break @ 14.28.		Box 2	
	17					
	19		Mechanical break @ 17.54.			CD 17.90 17.94 Pull 5 From 17.94 To 28.20 Run 10.06 Rec 10.10 CG 0.04 U.L. 0.00
	21		Machine break @ 20.45.	100%		
	22		High angle break from 21.15 to 21.65.		21.65	
	22		Angular break from 21.75 to 22.10.		Box 3	
652.1	23		Continued on Sheet #3.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-1-2	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
652.1	23		CONCRETE (Continued)			Pull 5 (Continued)
			- Angular break from 23.05 to 23.32.			
	24		- Angular break from 24.10 to 24.43.	100%		
	25		- Mechanical break @ 25.45.			
	26		- High angle break from 25.70 to 26.20.		Box 3	
	27					
	28					CD 28.00 28.00
						Pull 6
						From 28.00
						To 38.10
						Run 10.10
						Rec 10.05
	29					CL 0.05
				100%		U.G. 0.05
	30		- Mechanical break @ 30.12.			
644.1	31		Continued on Sheet #4.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-1-2	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) B
644.12	31.6	c	d CONCRETE (Continued)		Box 3 31.69	Pull 6 (Continued)
	32		- Mechanical break @ 31.69. - Angular break from 31.97 to 32.27.			
	33					
	34		- Machine break @ 34.02.	100%	Box 4	
	35		- Mechanical break @ 35.44.			
	36					
	37					
	38					- CD 38.00 38.10 Pull 7 From 38.10 To 48.03
636.1	39		Continued on Sheet # 5.			(Continued)

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-1-2	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 5 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		c	d	e	f	g
636.12	39b		CONCRETE (Continued)			Pull 7 (Continued) From 38.10 To 48.03 Run 9.93 Rec C u.
	40					
	41					
	42					
	43					
	44					
	45					
	46					
628.1	47		Continued on Sheet # 6.			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.1		Hole No. T-1-2		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 6 OF 9 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
628.1a	47b	c	CONCRETE (Continued)			Pull 7 (Continued)
	48					CD 47.85
	49					Pull 8
						From 48.03
						To 57.93
						Run 9.90
						Rec
						C
						u.
	50					
	51					
	52					
	53					
	54					
620.1	55		Continued on Sheet # 7.			

C-18

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-1-2	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 7 OF 9 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
550.1a	55b	c	CONCRETE (continued)			Pull 8 (Continued)
	56					
	57					
	58					CD 57.61
	59					57.93
	60					Pull 9
	62					From 57.93
	64					To 67.70
						Run 9.77
						Rec
						C
						U.
609.1	66		Continued on Sheet #8.			

C-19

PROJECT		ELEVATION TOP OF HOLE		Hole No.		
INSTALLATION		SHEET		OF 9 SHEETS		
Clemson Upper Diversion Dam		Hartwell Lake		T-1-2		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
667.1 a	66 b	c	d	e	f	g
			CONCRETE (Continued)			Pull 9 (Continued)
	68					Pull 10 From 67.70 To Run Rec C u.
	70					
	72					
	74					
	76					
	78					
	80					
593.1	82		Continued on Sheet # 9.			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. T-1-2		
PROJECT		INSTALLATION		SHEET 9 OF 9 SHEETS		
Clemson Upper Diversion Dam		Hartwell Lake				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
593.1a	82b	c	d	e	f	g
			GRANITE GNEISS (Continued)			
	84					
590.3			Bottom of Hole 84.8			84.8

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
1. PROJECT		South Atlantic		Hartwell Lake		1 OF 7 SHEETS	
2. LOCATION (Coordinates or Station)		5+34.6		10. SIZE AND TYPE OF BIT		R Diamond	
3. DRILLING AGENCY		Savannah District		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		MSL	
4. HOLE NO. (As shown on drawing title and title number)		T-4-1		12. MANUFACTURER'S DESIGNATION OF DRILL		Failing 3/4	
5. NAME OF DRILLER		C. D. Frazier		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED N/A	
6. DIRECTION OF HOLE		<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		14. TOTAL NUMBER CORE BOXES		2	
7. THICKNESS OF OVERBURDEN CONCRETE		83.05		15. ELEVATION GROUND WATER		N/A	
8. DEPTH DRILLED INTO ROCK		5.35		16. DATE HOLE		STARTED 8 Jan 84	
9. TOTAL DEPTH OF HOLE		88.40		17. ELEVATION TOP OF HOLE		675.1	
				18. TOTAL CORE RECOVERY FOR BORING		99.2 %	
				19. SIGNATURE OF INSPECTOR		Thaddeus G. Zierler Jr.	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.10	0.0		CONCRETE			Pull 1	
	1.0			96.4%		From 0.00 To 1.50	
	2.0					Run 1.50 Rec 1.06	
	3.0					CL 0.44 U.L. 0.04	
	4.0					CD 1.10	
	5.0					1.50	
	6.0			100%	Box 1	Pull 2	
	7.0					From 1.50 To 2.90	
	8.0					Run 1.40 Rec 1.25	
	9.0					CL 0.15 U.G. 0.05	
	10.0					CD 2.30	
	11.0					2.30	
	12.0			99.6%		Pull 3	
	13.0					From 2.90	
	14.0					To 7.50	
	15.0					Run 4.60	
	16.0					Rec 4.88	
	17.0					CG 0.28	
	18.0					U.L. 0.32	
	19.0					Note: Scale change at 4.00 feet.	
	20.0						
	21.0					CD 7.20	
	22.0			100%		2.50	
667.1	22.0		Continued on Sheet #2.			Pull 4 (Continued)	

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-4-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 7 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			CONCRETE (Continued)			Pull 4 (Continued)
			Machine break @ 8.52.			From 7.50
					Box 1	To 17.30
						Run 9.80
						Rec 10.10
	10			100%		CG 0.30
						U.L. 0.00
			Mechanical break @ 10.75.		10.95	
	12		Machine break @ 12.35.			
			Machine break @ 13.70.			
	14		Mechanical break @ 14.65.		Box 2	
			Machine break @ 15.47.			
	16					
						CG 17.30 17.30
						Pull 5
	18		Mechanical break @ 18.35.			From 17.30
			Machine break @ 18.72.			To 27.40
				99.7%		Run 10.10
						Rec 9.92
	20					CL 0.18
			Machine break @ 20.78.			U.L. 0.03
	22		Mechanical break @ 22.09.		22.09	
					Box 3	
57.1	24		Continued on Sheet #3.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-4-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 7 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
25.1	24.6		CONCRETE (Continued)			Pull 5 (Continued)
	26		Mechanical break @ 25.88.	99.77.		
	28					CD 27.25 27.40
	30		Mechanical break @ 29.61.	100%	Box 3	Pull 6 From 27.40 To 37.32 Run 7.92 Rec 10.04 CG 0.12 U.G. 0.07
	32					
	34		Mechanical break @ 33.40.		33.40	
	36					
	38		Mechanical breaks @ 36.27 37.27, - 38.43.		Box 4	CD 37.22 37.32
	40		Mechanical break @ 39.27. Continued on Sheet # 4.	100%		Pull 7 From 37.32 To 47.32 Run 10.00 Rec 10.10 CG 0.10 U.L. 0.00
35.1						

C-24

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-4-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 7 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.12	40.0		CONCRETE (Continued)			Pull 7 (Continued)
			Mechanical break @ 40.97.			
	42.0		Mechanical break @ 42.54.	100%	Box 4	
	44.0		Mechanical break @ 44.70.		44.70	
	46.0					
	48.0		Mechanical break @ 48.26.	99.9%	Box 5	CD 47.32 47.32 Pull 8 From 47.32 To 57.40 Run 10.08 Rec 10.00 CL 0.08 U.C. 0.01
	50.0					
	52.0		Mechanical break @ 51.93.			
	54.0					
	56.0		Mechanical break @ 55.57.		55.57 Box 6	
619.1			Continued on Sheet # 5.			

C-25

PROJECT		INSTALLATION		Hole No.		SHEET	
Clemson Upper Diversion Dam		Hartwell Lake		T-4-1		5	
ELEVATION		DEPTH		LEGEND		CLASSIFICATION OF MATERIALS (Description)	
619.1a		56b		c		d	
						CONCRETE (Continued)	
						99.9%	
						Pull 8 (Continued)	
						CD 57.33 57.40	
						Pull 9	
						From 57.40	
						To 67.40	
						Run 10.00	
						Rec 9.93	
						CL 0.07	
						U.G. 0.06	
						Box 6	
						66.75	
						CD 67.20 67.40	
						Pull 10	
						From 67.40	
						To 77.30	
						Run 9.90	
						Rec 10.05	
						CG 0.15	
						U.L. 0.05	
						Box 7	
						99.5%	
						Mechanical break @ 70.32.	
						Continued on Sheet # 6.	

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. T-4-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 6 OF 7 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
683.1	72		CONCRETE (Continued)			Pull 10 (Continued)
	74		Mechanical break @ 73.72.	99.5%	Box 7	
	76					Note: Scale change at 76.00 ft.
	77				77.25	CD 77.30 77.30
	78			99.6%		Pull 11 From 77.30 To 82.42 Run 5.12 Rec 5.00 CL 0.12 U.L. 0.02
	79		Mechanical break @ 79.57.		Box 8	
	80					
	81		Mechanical break @ 80.75.			
	82		Machine break @ 81.57. Partial core loss from 81.57 to 82.00. Void may have been filled with sand. Continued on Sheet #7.			
593.1						

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 6751		Hole No. T-4-1	
PROJECT Glendon Hydro Discharge Dam			INSTALLATION Hartwell Lake		SHEET 7 OF 7 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
582.1	82.6		CONCRETE (Continued) Partial core loss continues between pieces of concrete from 82.00 to 82.85. Machine break @ 82.70.	99.6%	Box 8	Pull 11 (Continued) -CD 82.32 82.42
	83		Bottom of Concrete 83.05	54.6%		Pull 12 From 82.42 To 83.40 Run 0.98 Rec 0.59 CL 0.37 U.L. 0.49
	84	GRANITE GNEISS Fine to medium grained, highly weathered to fresh, foliated with frequent horizontal partings.				CD 83.40 83.40
	85			100%		Pull 13 From 83.40 To 88.40 Run 5.00 Rec 4.74 CL 0.26 U.L. 0.33
	86					Note: Small amount of sand and slurry recovered on bottom of concrete.
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DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 6 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT R Diamond			
2. LOCATION (Coordinates or Station) 5+90.5				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Fairfax 3/4			
4. HOLE NO. (As shown on drawing title and file number) T-5-1				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED N/A	
5. NAME OF DRILLER C. E. Frazier				14. TOTAL NUMBER CORE BOXES		8	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		N/A	
7. THICKNESS OF OVERBURDEN CONCRETE 82.57				16. DATE HOLE		STARTED 6 Jan 84	
8. DEPTH DRILLED INTO ROCK 3.45				17. ELEVATION TOP OF HOLE		675.0	
9. TOTAL DEPTH OF HOLE 86.50				18. TOTAL CORE RECOVERY FOR BORING		96.9 %	
				19. SIGNATURE OF INSPECTOR Thaddeus J. Zickler Jr.			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.0	0		CONCRETE	98.6%		Pull 1 From 0.00 To 1.40 Run 1.40 Rec 1.38 CL 0.02 CD 1.40 U.L. 0.02 1.40	
	2			100%		Pull 2 From 1.40 To 2.90 Run 1.50 Rec 1.30 CL 0.20 CD 2.70 U.L. 0.00 2.90	
	4		Mechanical break @ 3.32. Machine break @ 3.90.	99.7%	Box 1	Pull 3 From 2.90 To 7.90 Run 5.00 Rec 3.39 CL 1.61 U.L. 0.01 CD 6.10 (Based on recovery)	
	6						
	8		Mechanical breaks @ 6.94 and 8.05.	100%		Pull 4 From 7.90 To 15.50 Run 7.60 Rec 4.93 CL 2.67 U.G. 0.03	
	10		Mechanical break @ 10.63.		10.63	CD 11.00	
	12		Continued on Sheet # 2.		Box 2		

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-5-1	
PROJECT Glenville Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
663.02	12		CONCRETE (Continued)			Pull 4 (Continued)
	14		Mechanical break @ 14.20.		Box 2	
	16			100%		Pull 5 From 15.50 To 20.50 Run 5.00 Rec 9.42 CG 4.42 U.G. 0.12
	18		Mechanical break @ 17.91.			
	20		Mechanical breaks @ 19.69 and 20.31.			CD 20.30
	22		Mechanical break @ 21.39.		21.39	Pull 6 From 20.50 To 30.50 Run 10.00 Rec 10.02 CG 0.02 U.G. 0.02
	24			100%		
	26		Mechanical breaks @ 25.18, 26.37, and 27.95		Box 3	
647.0	28		Continued on Sheet #3.			

C-30

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-5-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
647.02			CONCRETE (Continued)			Pull 6 (Continued)
	30		Mechanical breaks @ 28.96 and 30.00.	100%	Box 3	CD 30.30 30.50
	32		Mechanical breaks @ 31.20, 31.99, and 32.67.	99.8%	32.67	Pull 7 From 30.50 To 40.50 Run 10.00 Rec 10.08 CG 0.08 U.L. 0.02
	34					
	36		Mechanical breaks @ 36.68 and 37.57.		Box 4	
	38					
	40		Mechanical breaks @ 39.28 and 40.10.			CD 40.40 40.50
	42			99.3%		Pull 8 From 40.50 To 50.50 Run 10.00 Rec 9.93 CL 0.07 U.L. 0.07
631.0	44		Mechanical break @ 43.81. Continued on Sheet # 4.		43.81 Box 5	

C-31

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. T-5-1

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

4

OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.)
631.0 ^a	44b	c	d			8
			CONCRETE (Continued)			Pull 8 (Continued)
	46			99.3%		
	48		Mechanical break @ 47.58.		Box 5	
	50					CD 50.40 50.50
	52		Mechanical break @ 51.39.	99.5%		Pull 9 From 50.50 To 60.50 Run 10.00 Rec 10.05 CG 0.05 U.L. 0.05
	54					
	56		Mechanical break @ 55.17.		55.17	
	58				Box 6	
	60		Mechanical break @ 58.85.			
615.0			Continued on Sheet #15.			

C-32

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-5-1	
PROJECT Gleason Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 5 OF 6 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
615.0*	60 b	c	d	e	f	B
			CONCRETE (Continued)	99.5%		Pull 9 (Continued) CD 60.50 60.50
	62		Mechanical break @ 62.53.	100%	Box 6	Pull 10 From 60.50 To 70.50 Run 10.00 Rea 10.02 CG 0.02 U.G. 0.02
	64					
	66		Mechanical break @ 66.27.		66.27	
	68					
	70		Mechanical breaks @ 68.87 and 70.02.		Box 7	CD 70.50 70.50 Pull 11 From 70.50 To 80.50 Run 10.00 Rea 9.79 CL 0.21 U.L. 0.01
	72			99.9%		
	74		Mechanical break @ 73.67.			
697.0	76		Continued on Sheet #6.			

C-33

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-5-1	
PROJECT Gleason Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 6 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
599.0	76	c	d	e	f	g
			CONCRETE (Continued)		Box 7	Pull 11 (Continued)
					77.44	
	78		Mechanical break @ 77.44.	99.9%		
	80					CD 80.30 80.50
			Mechanical break @ 81.17.	90.8%	Box 8	Pull 12 From 80.50 To 83.00 Run 2.50 Rec 2.27 CL 0.23 U.L. 0.23 Note: Scale change at 82.0 ft.
592.4			Concrete/SC Contact. Red-brown fine to medium clayey sand at contact.			
592.2			Bottom of concrete 82.57. Core Loss 82.57-82.80.			CD 82.80
591.95	83		(SC) Red-brown fine to medium clayey sand w/ pieces of concrete GRANITE GNEISS (83.05-84.00) Greenish-gray, fine to coarse grained, intensely weathered			83.00
591.0	84		Core Loss.	32.4%		Pull 13 From 83.00 To 86.50 Run 3.50 Rec 1.20 CL 2.30 U.L. 2.50
				RQD 0		
	85					
	86					
588.5			Bottom of Hole 86.50			86.50
	87					

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET 1 OF 6 SHEETS
1. PROJECT Clemson Hopper Diversion Dam		10. SIZE AND TYPE OF BIT R Diamond		
2. LOCATION (Coordinates or Station) 4+95.5		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) T-6-1		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED N/A
5. NAME OF DRILLER C. D. Justiss		14. TOTAL NUMBER CORE BOXES 8		UNDISTURBED N/A
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER N/A		
7. THICKNESS OF OVERBURDEN CONCRETE 81.10		16. DATE HOLE 16 Jan 84		STARTED 18 Jan 84
8. DEPTH DRILLED INTO ROCK 2.88		17. ELEVATION TOP OF HOLE 675.4		
9. TOTAL DEPTH OF HOLE 84.00		18. TOTAL CORE RECOVERY FOR BORING 98.9 %		
		19. SIGNATURE OF INSPECTOR Thaddeus J. Zilberman, Jr.		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOXES OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
675.4	0		CONCRETE			
	1		Machine break @ 0.70.	96.6%		Pull 1 From 0.00 To 1.45 Run 1.45 Rec 1.40 CL 0.05 U.L. 0.05
	2		Machine breaks @ 2.21 and 2.81.	100%	Box 1	CD 1.45 1.45 Pull 2 From 1.45 To 2.81 Run 1.36 Rec 0.00 CL 0.33 U.G. 0.03 CD 2.40
	3		Mechanical break @ 3.46.	100%		Pull 3 From 2.81 To 7.45 Run 4.64 Rec 5.08 CG 0.44 U.G. 0.03
	5					Note: Scale change at 3.00 ft.
	7		Mechanical break @ 7.05.			CD 7.45 7.45
	9		Continued on Sheet # 2.	100%		Pull 4 From 7.45 To 17.54 (Continued)

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
PROJECT		INSTALLATION		SHEET		
Clemson Upper Diversion Dam		Hartwell Lake		2		
OF 6 SHEETS						
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
666.42			CONCRETE (Continued)			Pull 4 (Continued)
					Box 1	From 7.45
						To 17.54
						Run 10.09
						Rec 10.09
						CL 0.00
						U.G. 0.03
				100%		
	11		Mechanical break @ 10.74.			
	13					
	15		Mechanical break @ 14.51.		Box 2	
	17					
	19		Mechanical break @ 18.19.			
	21					
	23		Mechanical break through 1 1/2" dia. clay ball @ 21.31.			
	25		Mechanical breaks @ 21.98, 22.55, and 23.31.			
	27					
	29					
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	273					

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.4		Hole No. T-6-1		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 3 OF 6 SHEETS		
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
650.4	25		CONCRETE (Continued) - Mechanical break @ 25.55.	99.5%		Pull 5 (Continued)
	27					
	29		- Mechanical break @ 27.22.		Box 3	CD 27.64 27.65 Pull 6 From 27.65 To 37.74 Run 10.09 Rec 10.09 CL 0.00 U.G. 0.02
	31			100%		
	33		- Mechanical break @ 32.76.		32.96	
	35					
	37		- Mechanical break @ 35.65.		Box 4	
	39			100%		CD 37.71 37.74 Pull 7 From 37.74 To 47.82 Run 10.08 Rec 10.10 CG 0.02 U.G. 0.01
	41		- Mechanical break @ 40.31.			
634.4	41		Continued on Sheet # 4.			

C-37

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.4		Hole No. T-6-1		
PROJECT Clemson Upper Division Dam		INSTALLATION Eastwell Lake		SHEET 4 OF 6 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
634.4	41		CONCRETE (Continued)			Pull 7 (Continued)
	43				Box 4	
			Mechanical break @ 44.01.	100%	44.01	
	45					
			Mechanical break @ 46.28.			
	47					
						CD 47.80 47.82
						Pull 8
	49				Box 5	From 47.82
						To 57.90
						Run 10.08
						Rec 10.08
				99.8%		CL 0.00
						U.L. 0.02
	51					
			Mechanical break @ 51.42.			
	53					
	55					
			Mechanical break @ 55.17.		55.17	
			Mechanical break @ 56.43.		Box 6	
610.4	57		Continued on Sheet # 5.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.4		Hole No. T-6-1	
PROJECT Glenn-Colusa Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 5 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
613.4	57		CONCRETE (Continued)	99.8%		Pull 8 (Continued)
						CD 57.70 57.90
						Pull 9
						From 57.90
						To 67.95
						Run 10.05
						Rec 10.07
						CG 0.02
						U.G. 0.02
	59		Mechanical breaks @ 58.92 and 60.11.		Box 6	
	61			100%		
	63		Mechanical breaks @ 62.57, 63.66, and 64.49.			
	65					
	67		Mechanical breaks @ 66.25 and 66.74.		66.25	
	69		Mechanical break @ 69.25.	99.1%	Box 7	CD 67.95 67.95
	71					Pull 10
						From 67.95
						To 78.10
						Run 10.15
						Rec 10.06
						CL 0.09
						U.L. 0.09
602.4	73		Machine break @ 72.75. Continued on Sheet # 6.			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE	Hole No.			
PROJECT Clemson Upper Diversion Dam		675.4	T-6-1			
INSTALLATION Hartwell Lake		SHEET 6				
		OF 6 SHEETS				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
672.42	72b	c	CONCRETE (Continued) —Mechanical break @ 73.50.			Pull 10 (Continued)
	75			99.1%	Box 7	
	77		—Mechanical break @ 77.13.		77.13	
	79			94.4%		CD 78.10 78.10 Pull 11 From 78.10 To 81.40 Run 3.30 Rec 3.02 CL 0.28 U.L. 0.18 Note: Scale change @ 79.00 ft.
	80				Box 8	
	81		—Mechanical break @ 80.75. Bottom of Concrete 81.10 0.02' of black rubber from 81.10 to 81.12. Core Loss from 81.12 to 81.30. Core loss from 81.30 - 81.40.			—CD 81.30 81.40
	82		GRANITE GNEISS Fresh, salt + pepper colored, slightly foliated, low dark mineral content.	95.3%		Pull 12 From 81.40 To 84.00 Run 2.60 Rec 2.05 CL 0.55 U.L. 0.10
	83			RQD 91		—CD 83.45
591.4	84		Bottom of Hole 84.00 Ft.			84.00
C-40						

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Haptunall Lake	SHEET 1 OF 5 SHEETS
1. PROJECT Clemson Upper Diversion Dam			10. SIZE AND TYPE OF BIT P Diamond	
2. LOCATION (Coordinates or Station) 5+80.5 E			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) M.T.L.	
3. DRILLING AGENCY Savannah District			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) T-7-1			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED: N/A UNDISTURBED: N/A	
5. NAME OF DRILLER C. D. Justiss			14. TOTAL NUMBER CORE BOXES 6	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER N/A	
7. THICKNESS OF OVERBURDEN CONCRETE 62.2			16. DATE HOLE STARTED: 21 Dec 83 COMPLETED: 22 Dec 83	
8. DEPTH DRILLED INTO ROCK C.C.			17. ELEVATION TOP OF HOLE 675.0	
9. TOTAL DEPTH OF HOLE 62.2			18. TOTAL CORE RECOVERY FOR BORING 98.5 %	
			19. SIGNATURE OF INSPECTOR Thaddeus J. Zierler Jr.	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
675.0	0		Concrete	51.0%		Pull 1 From 0.00 To 2.00 Run 2.00 Rec 1.02 CL 0.98 Note: 100% gray return
	2		Machine breaks @ 2.32, 2.65, 1.37, 1.57, 3.00 and 2.75.	100%		Pull 2 Fr. 2.00 To 2.90 Run 0.90 Rec 1.50 CG 2.62
	4			46.1%	Box 1	Pull 3 From 1.30 To 3.00 Run 5.10 Rec 2.35 CL 2.75
	6					
	8		Mechanical breaks @ 7.67.			
	10			65.1%		Pull 4 From 2.00 To 11.23 Run 11.22 Rec 4.70 CL 2.52 CD 9.80
	12		Mechanical breaks @ 10.64 and 11.59.		11.59 Box 2	
663.0	12					

C-41

PROJECT		ELEVATION TOP OF HOLE		Hole No.		
INSTALLATION		SHEET		Of 5 SHEETS		
Clemson Upper Diversion Dam		Hartwell Lake		T-7-1		
675.0		2		2		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.)
a	b	c	d	e	f	g
663.02	12.6		CONCRETE (Continued)			Pull 4 (Continued)
	14		Mechanical breaks @ 12.60, 13.59, and 15.52.			Note: % Core recovery to end of Pull 4 based upon cut depths. Total U.L. to end of Pull 4 = 0.23. Total core recovery to end of Pull 4 = 97.7%.
	16				Box 2	Pull 5 From 15.22 To 20.20 Run 4.92 Rec 10.35 CG 5.37 U.L. 0.15
	18		Mechanical breaks @ 18.21 and 19.44.	100%		15.22
	20					CD 20.00 20.00
	22		Mechanical breaks @ 21.70, 23.17, and 24.06.	100%		Pull 6 From 20.20 To 30.00 Run 9.80 Rec 9.92 CG 0.12 U.L. 0.02
	24				23.17	
	26		Mechanical break @ 27.08.		Box 3	
647.0	28		Continued on Sheet # 3			

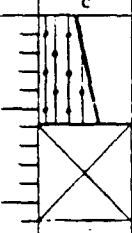
C-42

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-7-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
647.02	28.6	c	d	e	f	g
			CONCRETE (Continued)			Pull 6 (Continued)
	30		Mechanical breaks @ 28.70, 29.15, and 30.74.			25.22.22 30.20
	32			96.7%	Box 3	Pull 7 From 30.00 To 40.20 Run 10.20 Rec 7.77 C.L. 0.43 U.C. 0.33
	34					
	36		Mechanical breaks @ 34.49 and 35.62.			34.49
	38					
	40		Mechanical break @ 38.39.		Box 4	
	42		Mechanical breaks @ 41.03, 42.10, and 43.24.	100%		CD 40.00 40.20 Pull 8 From 40.20 To 42.90 Run 9.70 Rec 7.72 C.G. 0.22 U.G. 0.12
631.0	44		Continued on Sheet #4.			

C-43

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-7-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
631.0	44		CONCRETE (Continued)			Pull 8 (Continued)
			Mechanical breaks @ 44.19 and 46.03.		Box 4	
	46				46.03	
	48					
	50					CD 49.80 49.72
						Pull 9
						From 49.90
					Box 5	To 59.60
				100%		Run 9.70
	52					Rec 9.90
						CG 0.70
						U.G. 6.10
			Mechanical break @ 53.39.			
	54					
	56					
			Mechanical breaks @ 56.48 and 57.16.			
					57.16	Note: Began to exit con- crete @ 57.06.
	58		Machine breaks @ 57.74, 58.29, 58.84, and 59.38.		Box 6	
			Flat surface of concrete coated w/ 1/8" - 5/16" of red-brown clay (slurry cake) from 57.06 to B.O.H. Dark gray fine-grained silty (cont)			
615.0	60		Continued on Sheet # 5			CD 57.60 57.60
						Pull 10

C-44

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-7-1		
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 5 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
g	h	i	j	k	l	m	
612.8	60.2		CONCRETE AND SILTY SAND (Cont.) sand recovered with concrete. Machine breaks @ 60.53 + 61.02 Core Loss 61.34 to 62.20	69.6%	Box 6	Pull 10 (Continued) From 59.60 To 62.20 Run 2.60 Rec 1.74 CL 0.86 U.L. 0.76	
612.8	62		BOTTOM OF HOLE 62.20			62.20 62.20	

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
		South Atlantic		Hartwell Lake		1 OF 6 SHEETS	
1. PROJECT				10. SIZE AND TYPE OF BIT			
Clemson Upper Division Dam				R Diamond			
2. LOCATION (Coordinates or Station)				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
S + P2 E				MSL			
3. DRILLING AGENCY				12. MANUFACTURER'S DESIGNATION OF DRILL			
Savannah District				Fairline 3/4			
4. HOLE NO. (As shown on drawing title and file number)				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED N/A	
T-7-2						UNDISTURBED N/A	
5. NAME OF DRILLER				14. TOTAL NUMBER CORE BOXES			
C. D. Justice R. Justice				8			
6. DIRECTION OF HOLE				15. ELEVATION GROUND WATER			
<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				N/A			
7. THICKNESS OF OVERBURDEN CONCRETE				16. DATE HOLE			
83.90				STARTED 29 Dec 83			
8. DEPTH DRILLED INTO ROCK				COMPLETED 5 Jan 84			
5.60				17. ELEVATION TOP OF HOLE			
89.70				675.0			
9. TOTAL DEPTH OF HOLE				18. TOTAL CORE RECOVERY FOR BORING			
				98.2 %			
				19. SIGNATURE OF INSPECTOR			
				Thaddeus J. Zickler Jr.			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
675.0	0.0		0.00 - 0.40 Core loss.			Pull 1
			0.40 - 0.60 Uncemented aggregate and 1/2" - 1 1/2" pieces of concrete.			From 0.00 To 2.60
			0.60 - 1.59 Good concrete.	45.8%	Box 1	Run 2.60 Rec 1.19
			Machine break @ 1.17.			CL 1.41 U.L. 1.41
			1.59 - 2.83 Core loss.			CD 2.60 2.60
			Good concrete below 2.83.			Pull 2
				35.6%		From 2.60 To 4.20
			Machine breaks @ 3.46 and 5.06.			Run 1.60 Rec 1.37
						CL 0.23 U.L. 0.23
						CD 4.20 4.20
			Machine break @ 5.46.			Pull 3
				100%		From 4.20 To 9.30
						Run 5.10 Rec 5.11
			Machine break @ 6.95.			CL 0.01 U.L. 0.01
						CD 9.30 9.30
						Pull 4
				100%		From 9.30 To 19.30
						Run 10.00 Rec 9.91
						CL 0.09 U.L. 0.01
663.0	19.3		Machine break @ 21.22			
			Continued on Sheet #2			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-7-2	
PROJECT Clearing Upper Division Dam		INSTALLATION Hartwell Lake			SHEET 2 OF 6 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
663.02			CONCRETE (Continued)		Box 1	Pull 4 (Continued)
					13.08	
	14		Mechanical breaks @ 13.08 + 14.45.	100%		
	16		Mechanical breaks @ 16.02 + 16.86.		Box 2	
	18					
	20		Mechanical break @ 20.64.	100%		CD 19.20 19.30 Pull 5 From 19.30 To 29.10 Run 9.80 Rec 7.31 CL 2.49 U.G. 0.01
	22					
	24		Mechanical breaks @ 23.28, 23.93, + 24.61.		24.61	
	26				Box 3	CD 26.50
647.0	28		Continued on Sheet # 3			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-7-2	
PROJECT Clamsen Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 3 OF 6 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
647.02	28.6	c	CONCRETE (Continued) Mechanical break @ 28.18.			Pull 5 (Continued) 29.10
	30		Mechanical break @ 30.62.	99.1%	Box 3	Pull 6 From 29.10 To 34.10 Run 5.00 Rec 5.36 CG 0.36 U.L. 0.05 CD 31.91 (Based on core recovery.)
	32					34.10
	34		Mechanical break @ 35.05.		35.05	Pull 7 From 34.10 To 40.50 Run 6.40 Rec 8.49 CG 2.09 U.L. 0.00
	36			100%		
	38		Mechanical break @ 38.73.		Box 4	
	40					CD 40.40 40.50
	42		Mechanical break @ 42.13.	100%		Pull 8 From 40.50 To 50.50 Run 10.00 Rec 70.10 CG 0.10 U.L. 0.00
31.0	44		Continued on Sheet # 4			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. T-7-2	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 6 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
631.0 ^a	44 ^b		CONCRETE (Continued)			Pull 8 (Continued)
					Box 4	
					45.86	
	46		Mechanical break @ 45.86.	100%		
	48					
			Mechanical breaks @ 48.80, 49.26, and 49.76.		Box 5	
	50					
						CD 50.50 50.50
						Pull 9
						From 50.50
						To 60.50
						Run 10.00
						Rec 8.71
						CL 1.29
						U.G. 0.01
	52		Mechanical break @ 52.74.	100%		
	54					
			Mechanical breaks @ 55.18 and 56.40.			
	56				56.40	
	58				Box 6	
						CD 59.20
615.0	60		Continued on Sheet # 5			

C-49

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE		Hole No.	
PROJECT			INSTALLATION		SHEET	
Clemson Upper Diversion Dam			Hartwell Lake		6 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
599.6 ^a	7/16 b	c	d	e	f	g
			CONCRETE (Continued)	100%	Box 7	Pull 11 (Continued)
	78					
			Mechanical break @ 78.80.		78.80	
						CD 79.30 79.30
	80					Pull 12
						From 79.30
						To 83.90
				98.9%		Run 4.60
						Rec 4.55
	82				Box 8	CL 0.05
			Mechanical break @ 82.41.			U.L. 0.05
			Bottom of Concrete 83.90			CD 83.90 83.90
	84		(SC) Red-brown fine to medium clayey sand from 83.70 to 84.10.	100% RQD 0		Pull 13 (83.90 to 84.40)
						Run 0.50 Rec. 0.50 84.40
						CL 0.00 U.L. 0.00
			(GRANITE GNEISS)			CD 84.40
			Intensely weathered, fine to coarse grained, micaceous, foliated, numerous horizontal fractures (high fracture frequency).			Pull 14
						From 84.40
	86					To 89.70
						Run 5.30
						Rec 5.30
						CL 0.00
	88					U.L. 0.00
585.3			Bottom of Hole 89.70			CD 89.70 89.70
	90					

DRILLING LOG						DIVISION South Atlantic	INSTALLATION Havtwell Lake	SHEET 1 OF 7 SHEETS
1. PROJECT <u>Clinson Upper Diversion Dam</u>								
2. LOCATION (Coordinates or Station) <u>4+73.0</u>								
3. DRILLING AGENCY <u>Savannah District</u>								
4. HOLE NO. (As shown on drawing title and file number) T-10-1								
5. NAME OF DRILLER <u>C. D. Justiss</u>								
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.								
7. THICKNESS OF OVERBURDEN CONCRETE 81.3'								
8. DEPTH DRILLED INTO ROCK 3.2'								
9. TOTAL DEPTH OF HOLE 25.5'								
10. SIZE AND TYPE OF BIT R Diamond								
11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL								
12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314								
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED N/A UNDISTURBED N/A								
14. TOTAL NUMBER CORE BOXES 8								
15. ELEVATION GROUND WATER N/A								
16. DATE HOLE STARTED 25 Jan 84 COMPLETED 26 Jan 84								
17. ELEVATION TOP OF HOLE 675.2								
18. TOTAL CORE RECOVERY FOR BORING 98.4%								
19. SIGNATURE OF INSPECTOR <u>Theodore J. Zierler Jr</u>								
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)		
675.2	0 b	c	d CONCRETE	e	f	g		
	1		- Machine break @ 0.78.	97.3%		Pull 1 From 0.00 To 1.50 Run 1.50 Rec 1.46 CL 0.04 U.L. 0.04		
	2			100%	Box 1	CD 1.50 1.50 Pull 2 From 1.50 To 2.45 Run 0.95 Rec 0.92 CG 0.03 U.G. 0.03		
	3					CD 2.45 2.45 Pull 3 From 2.45 To 7.52 Run 5.07 Rec 5.05 CL 0.02 U.G. 0.08		
	4		- Mechanical break @ 3.68.	99.6%		Note: Scale change @ 4.00 ft.		
	6		- Machine break @ 6.24.					
	8			100%		CD 7.42 7.52 Pull 4		
667.2			Continued on Sheet #2.			(Cont:nued)		
C-52								

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.2		Hole No. T-10-1		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 2 OF 7 SHEETS		
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
667.2	8		CONCRETE (Continued)			Pull 4 (Continued) From 7.52 To 17.52 Run 10.00 Rec 10.11 CG 0.11 U.G. 0.03
	10				Box 1	
			Mechanical break @ 11.12	100%	11.12	
	12					
	14					
			Mechanical break @ 14.88			
	16				Box 2	
	18					CD 17.50 17.52 Pull 5 From 17.52 To 27.60 Run 10.08 Rec 9.99 CL 0.09 U.L. 0.00
			Mechanical break @ 18.44	100%		
	20					
	22					
			Mechanical break @ 22.14		22.14	
					Box 3	
651.2	24		Continued on Sheet # 3.			

C-53

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.2		Hole No. T-10-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 7 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
651.2	24.6		CONCRETE (Continued)			Pull 5 (Continued)
	26		Mechanical break @ 25.92.	100%		
	28				Box 3	CD 27.49 27.60 Pull 6 From 27.60 To 37.30 Run 9.70 Rec 9.80 C.G. 0.10 U.L. 0.06
	30		Mechanical break @ 29.64.	100%		
	32		Machine break @ 31.13.			
	34		Mechanical break @ 33.37.		33.39	
	36				Box 4	CD 37.23 37.30 Pull 7 From 37.30 To 47.37 Run 10.07 Rec 9.90 CL 0.17 U.G. 0.03
	38			98.3%		
	40		Machine break @ 39.52.			
635.2			Continued on Sheet # 4.			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.2		Hole No. T-10-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 7 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
635.2a	40b	c	d	e	f	B
			CONCRETE (Continued)			Pull 7 (Continued)
	42		Mechanical breaks @ 41.02 and 42.21.	98.3%	Box 4	
	44		Machine break @ 43.33.			
	46		Mechanical breaks @ 44.21, 44.62, and 44.97.		44.62	
	48		Mechanical break @ 48.30.	100%	Box 5	CD 47.10 Pull 8 From 47.37 To 57.20 Run 9.83 Rec 10.11 CG 0.28 U.G. 0.11
	50		Mechanical break @ 50.27.			
	52		Mechanical break @ 52.10.			
	54					
517.2	56		Mechanical break @ 55.88. Continued on Sheet #5.		55.88	
			C-55			

PROJECT		ELEVATION TOP OF HOLE	Hole No.
Clauson Upper Diversion Dam		675.2	T-10-1
INSTALLATION		SHEET	
Hartwell Lake		5	
		OF 7 SHEETS	
ELEVATION	DEPTH	LEGEND	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
619.2a	56b	c	d
			% CORE RECOVERY e
			BOX OR SAMPLE NO. f
			CONCRETE (Continued)
			Pull 8 (Continued)
			CD 57.10 57.20
			Pull 9
			From 57.20
			To 67.30
			Run 10.10
			Rec 10.10
			CL 0.00
			U.L. 0.10
			Mechanical break @ 59.43.
			99.0%
			Box 6
			Mechanical break @ 61.67.
			Mechanical break @ 63.20.
			Machine breaks @ 63.72, 64.48, and 64.77.
			Machine break @ 65.95.
			Mechanical break @ 66.87.
			CD 67.30 67.30
			Pull 10
			From 67.30
			To 77.37
			Run 10.07
			Rec 8.92
			CL 1.15
			U.L. 0.03
			Machine break @ 69.5.
			99.7%
			Box 7
			Mechanical break @ 70.60.
			Continued on Sheet # 6.
			C-56

C-56

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.2		Hole No. T-10-1	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 6 OF 7 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
673.2	72	c	d CONCRETE (Continued)	-		B Pull 10 (Continued)
	74		- Mechanical break @ 73.28.	99.79%	Box 7	
	76					- CD 76.25
	78		- Mechanical break @ 77.27.		77.27	77.27
	79		- Machine break @ 78.45.	85.3%		Pull 11 From 77.37 To 82.80 Run 5.43 Rec 5.05 CL 0.38 U.L. 0.87 Note: Scale change at 78.00 ft.
	80		- Machine break @ 80.15.		Box 8	
	81		- Machine break @ 80.98.			
593.9			Bottom of Concrete 81.30 CORE LOSS 81.30 to 82.17			Note: Approx. 1 ft. red drop @ 81.30.
593.0 592.85	82		(C) Red-brown fine-med. clay/ silt.			- CD 82.17
			GRANITE GNEISS Fresh, light gray salt-and- pepper colored, slightly foliated.			73.20
592.0	83		Continued on Sheet # 7.			Pull 12 (Continued)

C-57

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.2		Hole No. T-10-1	
PROJECT Clauson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 7 OF 7 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
82.2a	83b		GRANITE GNEISS (Continued) Fresh, light gray salt- and-pepper colored, slightly foliated.	*95.6%		Pull 12 (Continued) From 82.80 To 85.50 Run 2.70 Rcc 2.58 CL 0.12 Tape 82.82 *Note: % core recovery/ for Pull 12 based on run length. Material under pencil apparent- ly came up in hole during withdrawal of core barrel. 85.50
	84			RQD 89	Box 8	
	85		Bottom of Hole 85.50			
88.7						

PRODUCTION PANELS

CQC Boring Logs

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 2 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 1+62				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 3				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 3		15. ELEVATION GROUND WATER 654.8 (24hrs.)	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				16. DATE HOLE 6-15-84		STARTED COMPLETED 6-15-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 675.3			
8. DEPTH DRILLED INTO Concrete 26.1				18. TOTAL CORE RECOVERY FOR BORING 93 %			
9. TOTAL DEPTH OF HOLE 29.3				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.03	0 b	c	Angular machine break 0-0.1' Concrete	98	Box 1	Pull 1 From 0.0 to 4.3 Run 4.3 Rec 4.2 C.L. 0.1 Time 10:19-10:28 Note: 100% return drill water-gray color	
671.0	4		Machine break 5.5'	102		Tape depth 4.2' Pull 2 From 4.3 to 9.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:32-10:39	
666.0	10				10.8	Tape depth 9.3' Pull 3 From 9.3 to 14.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:43-10:52	
	12		Machine break 12.1'	100	Box 2		
			C-60				
661.3	14						

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.3		Hole No. 3	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 2 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
661.3 661.0	14b	c	d			
			Concrete (Continued)			Pull 3 (Continued) Tape depth 14.3'
	16			96	Box 2	Pull 4 From 14.3 to 19.3 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:57-11:07 Note: Changed from bottom discharge to face discharge bit at depth 19.3'
	18		Machine break 18.1'			
656.0						Tape depth 19.1'
	20		Machine break 20.2'	102		Pull 5 From 19.3 to 24.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:19-11:35
	22		Machine break 21.6'		21.6'	
			Machine break 22.8'		Box 3	
			Machine break 23.6'			
651.0	24					Tape depth 24.2'
	26		Machine break 25.8' Bottom of concrete 26.1' Clay bentonite-sand contact material 26.1'- 26.9'	78		Pull 6 From 24.3 to 29.3 Run 5.0 Rec 3.1 C.L. 1.9 Time 11:41-12:01 Note: Decrease RPM for run; drill water color change at 26.0' from gray to light brown, then at 28.5' from light brown to gray Tape depth 28.5'
	28		Highly weathered gneiss RQD=0% very poor rock quality			
646.0					29.3'	
	30		Bottom of hole 29.3'			Note: 6-15-84 water level after drilling 20.0'
						6-18-84 water level 24 hrs. after drill- ing 20.5'

C-61

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 4 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 3+21				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 9				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 6			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 656.5 (24hrs.)		16. DATE HOLE STARTED 6-15-84 COMPLETED 6-18-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 674.7'			
8. DEPTH DRILLED INTO ROCK Concrete 55.2				18. TOTAL CORE RECOVERY FOR BORING 98 %			
9. TOTAL DEPTH OF HOLE 59.2				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
674.7	0 b	c	d	e	f	g	
			Loose aggregate zone 0.0'-1.0'	100	Box 1	Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.2 C.L. 0.0 Time 1:17-1:23 Note: 100% return drill water-gray color	
	2		Machine break 2.2'				
			Poorly cemented aggregate zone (0-3/4" deep) 3.0'-7.8'			Tape depth 4.2'	
670.5	4					Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:30-1:41	
	6		Machine break 5.3'	100			
	8						
			Poorly cemented aggregate zone (0-3/8" deep) 8.7'-10.7'			Tape depth 9.2'	
665.5	10		Machine break 10.2'	98	10.9	Pull 3 From 9.2 to 14.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:46-1:55	
	12		Poorly cemented aggregate zone (0-3/4" deep) 12.5'-16.3'		Box 2		
			Machine break 13.0'				
660.7	14						

C-62

PROJECT		ELEVATION TOP OF HOLE		Hole No.9		
Clemson Upper Diversion Dam		674.7		SHEET 2		
INSTALLATION		Hartwell Lake		OF 4 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
660a7	14b	c	d	e	f	g
660.5			Poorly cemented aggregate zone (0-3/4" deep) 12.5'-16.3'		Box 2	Pull 3 (Continued) Tape depth 14.1'
	16		Machine break 15.7'	102		Pull 4 From 14.2 to 19.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:02-2:14
	18		Machine break 17.8'			
655.5						Tape depth 19.2'
	20			98		Pull 5 From 19.2 to 24.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:22-2:34
	22		Machine break 21.2'		21.2'	
650.5	24					Tape depth 24.1'
			Machine break 24.9'			Pull 6 From 24.2 to 29.2 Run 5.0 Rec 5.2 C.L. 0.0 Time 2:42-2:52
	26			104		
			Machine break 26.9'			
	28					
645.5						Tape depth 29.2'
	30			98		Pull 7 From 29.2 to 34.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:30-9:43
					31.4'	
642.7	32				Box 4	
Continued on sheet #3						

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 9	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 3 OF 4 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
642.7	32b	c	Concrete (Continued)			Pull 7 (Continued)
			Machine break 33.3'		Box 4	
640.5	34					Tape depth 34.0'
				102		Pull 8 From 34.2 to 39.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:49-10:00
	36		Machine break 36.3'			
						Tape depth 39.2'
635.5	38		Machine break 38.0'			
				98		Pull 9 From 39.2 to 44.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:06-10:21
	40					
	42				42.3	
					Box 5	
630.5	44					Tape depth 44.1'
						Pull 10 From 44.2 to 49.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:26-10:44
	46		Machine break 45.8'	102		
	48		Machine break 47.8'			
625.5						Tape depth 49.2'
						Pull 11 From 49.2 to 54.2
624.7	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 9	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 4 OF 4 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
624.7	50b	c	Machine break 50.1' Concrete (Continued)	98	Box 5	Pull 11 (Continued) Run 5.0 Rec 4.9 C.L. 0.1 Time 11:03-11:24 Note: changed from bottom discharge bit at depth 49.2', water color change from gray to tan at depth 54.0'
	52		Machine break 52.3' Machine break 52.8' Machine break 53.6'		52.8'	Tape depth 54.1'
620.5	54		Machine break 54.8' Bottom of concrete 55.2' Clay bentonite-sand contact material 55.2'- 56.7'	82	Box 6	Pull 12 From 54.2 to 59.2 Run 5.0 Rec 4.1 C.L. 0.9 Time 11:31-11:46 Note: water color change from tan to gray at depth 57.0' Cored material stuck in barrel used water hose to flush material out of barrel
	56		Slightly weathered gniness 56.7'-59.2' RQD=92%, excellent rock quality			
	58					
615.5			Bottom of hole 59.2'		59.2'	Tape depth 59.2'
	60					Note: 6-18-84 water level after drilling 13.5' 6-19-84 water level 24hrs. after drill- ing 18.2'

Q-65

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Hartwell Lake	SHEET OF 6 SHEETS
1. PROJECT Clemson Upper Diversion Dam		10. SIZE AND TYPE OF BIT HQ Diamond		
2. LOCATION (Coordinates or Station) STA. 8+90		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL		
3. DRILLING AGENCY Froehling and Robertson		12. MANUFACTURER'S DESIGNATION OF DRILL CME 55		
4. HOLE NO. (As shown on drawing title and file number) 26A		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED UNDISTURBED		
5. NAME OF DRILLER Tommy Burnette		14. TOTAL NUMBER CORE BOXES 9		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER 639.5 (24 hrs.)		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED 6-6-84 COMPLETED 6-7-84		
8. DEPTH DRILLED INTO ROCK Concrete 83.5		17. ELEVATION TOP OF HOLE 675.0'		
9. TOTAL DEPTH OF HOLE 89.2		18. TOTAL CORE RECOVERY FOR BORING 99 %		
19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)				

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
675.0	0	b	c	d	e	f
	2		Concrete Clay bentonite seam 0.5'-0.7'	95	Box 1	Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.0 C.L. 0.2 Time 9:40-9:54 Note: 100% return drill water-gray color
669.8	4		Machine break 4.8'			Tape depth 4.2'
	6			100		Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:18-11:26
665.8	10			100		Tape depth 9.2'
	12		Occasional aggregate voids (0"-3/8" deep) 11.0'-12.8'		11.1'	Pull 3 From 9.2 to 14.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:29-11:37
	14				Box 2	
661.0						

C-66

Continued on sheet #2

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. 26A

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

2

OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661.0	14.0	c	d			
660.8			Concrete (Continued)		Box 2	Pull 3 (Continued) Tape depth 14.2'
	16			100		Pull 4 From 14.2 to 19.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:42-11:51
			Machine break 16.7'			
	18					
655.8						Tape depth 19.2'
	20			100		Pull 5 From 19.2 to 24.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:56-12:00 12:35-12:43 Note: 35 minute downtime for lunch.
	22				21.5'	
			Machine break 23.1'		Box 3	
	24					Tape depth 24.2'
650.8				96		Pull 6 From 24.2 to 29.2 Run 5.0 Rec 4.8 C.L. 0.2 Time 12:48-12:57
	26					
			Machine break 27.3'			
	28					
645.8						Tape depth 29.0'
	30			100		Pull 7 From 29.2 to 34.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:10-2:20
				C-67		
643.0	32		Continued on sheet #3			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.0		Hole No. 26A		
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.0	32	c	d		32.3'	
			Concrete (Continued) Machine break 32.3'			Pull 7 (Continued)
640.8	34				Box 4	Tape depth 34.0'
				102		Pull 8 From 34.2 to 39.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:26-2:36
	36					
			Machine break 37.7'			
	38					
635.8						Tape depth 39.1'
				102		Pull 9 From 39.2 to 44.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:42-2:57
	40					
			Machine break 42.5'			
	42				43.1'	
					Box 5	Tape depth 44.2'
630.8	44					Pull 10 From 44.2 to 49.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:22-9:44 Note: 5 minute down- time to refill water tank
				98		
	46					
			Machine break 48.2'			
	48					
625.8				C-68		Tape depth 49.1
625.0	50		Continued on sheet #4			Pull 11

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 26A		
PROJECT		INSTALLATION		SHEET		
Clemson Upper Diversion Dam		Hartwell Lake		4 OF 6 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
625.0	50	c	d			
			Concrete (Continued)		Box 5	Pull 11 (Continued) From 49.2 to 54.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:51-10:03
	52		Machine break 51.8'	100		
620.8	54		Machine break 54.3'		54.2	Tape depth 54.1'
	56		Machine break 56.6'	102	Box 6	Pull 12 From 54.2 to 59.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:11-10:27
615.8	58					Tape depth 59.2'
	60			100		Pull 13 From 59.2 to 64.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:35-10:50
	62		Machine break 62.3'			
			Segregated aggregate 63.3'-63.8'			
610.8	64				64.9'	Tape depth 64.2'
	66			96	Box 7	Pull 14 From 64.2 to 69.2 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:59-11:16
			Machine break 67.7'	C-69		
607.0	68		Continued on sheet #5			

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. 26A

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

5

OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607a.0	68b	c	d	e	f	g
605.8	70		Concrete (Continued)	104	Box 7	Pull 14 (Continued) Tape depth 69.0'
600.8	74					Pull 15 From 69.2 to 74.2 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:27-11:46 Tape depth 74.2'
	76			96	Box 8	Pull 16 From 74.2 to 79.2 Run 5.0 Rec 4.8 C.L. 0.2 Time 11:55-12:41 Note: 35 minute break in drilling for lunch Tape depth 79.0'
595.8	80		Machine break 80.8'	98		Pull 17 From 79.2 to 84.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:12-1:24 Note: Changed to facedischarge bit at depth 79.2'
	82		Concrete panel-earth dike interface (0-1 1/2" deep) 81.6'-83.5' Machine break 82.1'			
	84		Machine break 83.2' Bottom of concrete 83.5' Highly weathered gneiss 83.5'-89.2' Very poor rock quality RQD=0%	96		Tape depth 84.0'
590.8						Pull 18 From 84.2 to 89.2 Run 5.0 Rec 4.8 C.L. 0.2
589.0	86		Continued on sheet #6		86.0'	

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.0		Hole No. 26A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 6 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		c	d	e	f	g
589.0	86					
	88		Highly weathered gneiss		Box 9	Pull 18 (Continued) Time 1:34-1:41 Note: 100% return drill water-green color. Material in inner barrel too tight to remove by gravity-washed out gneiss from inner barrel
585.8	90		Bottom of hole 89.2'		89.2'	Tape depth 89.0'
						Note: 6-7-84 water level after drilling 25.4'
						6-8-84 water level 24hrs. after drill- ing 35.5'

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 4 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT H0 Diamond			
2. LOCATION (Coordinates or Station) STA. 8+94				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 26				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 6			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. DATE HOLE		STARTED 6-4-84	
7. THICKNESS OF OVERBURDEN				16. ELEVATION GROUND WATER		Not measurable	
8. DEPTH DRILLED INTO ROCK Concrete 58.6				17. ELEVATION TOP OF HOLE 674.5		18. TOTAL CORE RECOVERY FOR BORING 100%	
9. TOTAL DEPTH OF HOLE 58.6				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
674.5	0	b	c	d	e	f	g
	2		Loose aggregate 0-0.3' Poorly cemented aggregate 0.3-9.6'	92	Box 1	Pull 1 From 0.0 to 3.6 Run 3.6 Rec 3.3 C.L. 0.3 Time 1:51-2:06 Note: 4 minute down time to check water tank	
670.9	4		Angular machine break 1.8'-2.1'			Tape depth 3.6'	
	6		Machine break 3.8'	102		Pull 2 From 3.6 to 8.6 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:19-9:25	
	8		Concrete			Tape depth 8.6'	
665.9	10		Machine break 7.5'	98	10.9'	Pull 3 From 8.6 to 13.6 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:33-9:40	
	12				Box 2		
660.9	14					Tape depth 13.5'	
660.5						Pull 4	

Continued on sheet #2

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 674.5		Hole No. 26		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 2 OF 4 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
g						
660.5	14	c	Concrete (Continued)		Box 2	Pull 4 (Continued) From 13.6 to 18.6 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:48-9:56 Note: 100% return drill water-gray color.
	16			104		
	18					Tape depth 18.7'
655.9	20			98		Pull 5 From 18.6 to 23.6 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:02-10:26 Note: 10 minute downtime to refill water tank
	22				22.0'	
650.9	24				Box 3	Tape depth 23.5'
	26			102		Pull 6 From 23.6 to 28.6 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:31-10:42
	28		Machine break 27.0'			
645.9	30			96		Tape depth 28.6'
	32					Pull 7 From 28.6 to 33.6 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:49-10:59
642.5						
Continued on sheet #3						

C-73

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.5		Hole No. 26	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 3 OF 4 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
642.5	32	c	d			
			Concrete (Continued)		32.8'	Pull 7 (Continued)
640.9						Tape depth 33.4'
	34					Pull 8
						From 33.6 to 38.6
						Run 5.0
						Rec 5.2
						C.L. 0.0
						Time 11:06-11:20
	36		Machine break 36.4'	104	Box 4	
635.9						Tape depth 38.6'
	38					Pull 9
						From 38.6 to 43.6
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 11:46-11:58
						Note: Changed bits
						at depth 38.6' to
						decrease drill time
	40		Machine break 40.8'	100		
						Tape depth 43.6'
	42		Machine break 42.3'			Pull 10
630.5						From 43.6 to 48.6
	44					Run 5.0
						Rec 4.9
						C.L. 0.1
						Time 12:41-12:50
	46			98	Box 5	
						Tape depth 48.6'
625.9						Pull 11
	48					From 48.6 to 53.6
						Run 5.0
624.5	50					
			Continued on sheet #4			

C-74

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

674.5

Hole No. 26

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 4

OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
624.5	50	c	d	e	f	g
			Concrete (Continued)	102	Box 5	Pull 11 (Continued) Rec 5.1 C.L. 0.0 Time 12:58-1:06
	52		Machine break 51.9'			
620.9	54		Aggregate voids (0-3/8" deep) 53.6'-55.6'		54.7'	Tape depth 53.6' Pull 12 From 53.6 to 58.6 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:13-1:20
	56		Concrete panel-earth dike interface (0-1/2" deep) 55.6'-58.6'	100	Box 6	Note: 100% return drill water, gray color then light brown color at 56.0' depth
	58		Machine break 57.7'			
615.9			Bottom of hole 58.6'			Tape depth 57.9'
						6-5-84- water level not measurable due to standing water around hole after drilling 6-6-84 water level not measureable due to standing water around hole 24 hours.

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1	
		South Atlantic		Hartwell Lake		OF 6 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HO Diamond			
2. LOCATION (Coordinates or Station) Sta. 9+85				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME55			
4. HOLE NO. (As shown on drawing title and file number) 30				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER T. Burnette (J. Donnahoo on 5-24)				14. TOTAL NUMBER CORE BOXES 8		15. ELEVATION GROUND WATER 630.2 (24hrs.)	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				16. DATE HOLE 5-23-84		STARTED COMPLETED 5-25-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 674.7			
8. DEPTH DRILLED INTO Concrete 81.6ft.				18. TOTAL CORE RECOVERY FOR BORING 94%			
9. TOTAL DEPTH OF HOLE 87.1				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
674.7	0						
			Poorly cemented aggregate seam .2'-.4'			Pull 1	
			Concrete			From 0.0 to 2.1	
						Run 2.1	
			Poorly cemented aggregate zone 1.5'-2.1'	90	Box 1	Rec. 1.9	
			(0-2" deep)			C.L. 0.2	
672.6	2					Time 1:55-2:02	
						Note: 100% return drill water-gray color	
						Tape depth 1.9'	
						Pull 2	
			Machine break 4.4'			From 2.1 to 7.1	
						Run 5.0	
				104		Rec. 5.2	
						C.L. 0.0	
						Time 2:15-2:24	
667.6	6					Tape depth 7.1'	
			Poorly cemented aggregate zone 6.7'-9.4'			Pull 3	
			(0-3/8" deep)			From 7.1 to 12.1	
						Run 5.0	
						Rec 5.0	
				100		C.L. 0.0	
						Time 2:28-2:35	
						Tape depth 12.1'	
662.6	12				Box 2	Pull 4	
						From 12.1 to 17.1	
						Run 5.0	
						Rec 4.9	
660.7	14			98		C.L. 0.1	

Continued on sheet #2

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
g	h	i	j	k	l	m
660.7	14	c	Concrete (Continued)		Box 2	Pull 4 (Continued) Time 2:38-2:45
	16			98		
657.6	18		Aggregate void (1/2" deep) 18.2'			Tape depth 17.0' Pull 5 From 17.1 to 22.1 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:50-2:56
	20			102		
652.6	22				21.9'	Tape depth 22.1'
	24			98	Box 3	Pull 6 From 22.1 to 27.1 Run 5.0 Rec 4.0 C.L. 0.1 Time 3:01-3:07
647.6	26					Tape depth 27.0'
	28			98		Pull 7 From 27.1 to 32.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 3:14-3:20
	30					
			Poorly cemented aggregate zone (0-3/8" deep) 30.7' -33.8' C-77			
642.7	32					
Continued on sheet #3						

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 674.7		Hole No. 30		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 3 OF 6 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
642.7	32					
642.6			Poorly cemented aggregate zone (0-3/8" deep) 30.7'-33.8'		32.1	Pull 7 (Continued) Tape depth 32.0'
	34		Concrete (Continued)	100	Box 4	Pull 8 From 32.1 to 37.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:27-9:32
	36					
637.6						Tape depth 37.0'
	38			104		Pull 9 From 37.1 to 42.1 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:41-9:48
	40					
632.6	42				42.1	Tape depth 42.2
	44			100	Box 5	Pull 10 From 42.1 to 47.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:57-10:02
	46		Machine break 46.0'			
627.6						Tape depth 47.2'
	48			100		Pull 11 From 47.1 to 52.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:09-10:17
			C-78			
624.7	50					
Continued on sheet #4						

Continued on sheet #4

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET OF 6 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
624.7	50	c	Concrete (Continued)			Pull 11 (Continued)
					Box 5	
622.6	52				52.1'	Tape depth 52.1'
				98		Pull 12 From 52.1 to 57.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:32-10:42
	54				Box 6	
	56					
617.6						Tape depth 57.1'
		Machine breaks 57.4, 57.5, 57.7, 58.0, and 58.3 (due to water line malfunction)		102		Pull 13 From 57.1 to 59. Run 2.5 Rec 2.6 C.L. 0.0 Time 10:52-10:58 Note: water line malfunction while drilling pull partial run and continued drilling to complete 5' run Tape depth 59.2'
	58					
	60			100		
612.6	62				62.1'	Pull 14 From 59.6 to 62.1 Run 2.5 Rec 2.5 C.L. 0.0 Time 9:32-9:36 Tape depth 62.2'
	64					Pull 15 From 62.1 to 67.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:45-9:50
	66		Machine break 66.3'	100	Box 7	
607.6				0.79		Tape depth 67.1
						Pull 16 From 67.1 to 72.1
606.7	68		Continued on sheet #5			

PROJECT		ELEVATION TOP OF HOLE		Hole No.		SHEET	
Clemson Upper Diversion Dam		674.7		30		5	
INSTALLATION		Hartwell Lake		OF 6 SHEETS			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
g			d			g	
606.7	68	c	Concrete (Continued)		Box 7	Pull 16 (Continued) Run 5.0 Rec 5.0 C.L. 0.0 Time 9:56-10:02	
	70			100			
602.6	72				72.1'	Tape depth 72.1'	
	74			100	Box 8	Pull 17 From 72.1 to 77.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:06-10:15	
	76						
597.6	78		Aggregate voids (0-½" deep) 78.5'-79.4'	90		Tape depth 77.1'	
	80		Clay bentonite seam 78.1'			Pull 18 From 77.1 to 82.1 Run 5.0 Rec 4.5 C.L. 0.5 Time 10:22-10:28 Note: change in drill water color from gray to brown at 80' depth. Tool drop .5' at bottom of run Tape depth 82.0'	
	82		Aggregate voids (0-1" deep) 80.1-81.4 Clay bentonite seam 80.3'			Pull 19 From 82.1 to 87.1 Run 5.0 Rec 0.0 C.L. 5.0 Time 11:11-11:17	
	84		Bottom of concrete, 81.6'	0			
588.7	86						

Continued on sheet #6

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 6 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
588.7	86b	c			Box 8	Pull 19 (Continued)
587.6			Concrete (Continued)		87.1'	Tape depth 87.0'
			Bottom of hole 87.1'			Note: May 25, 1984 water level after completion of drilling- 37.0'. May 29, 1984 water level 24hrs. after drilling 44.5'

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 4 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 9+95				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 30-A				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER T. Burnette (J. Donnahoo 5-29-84)				14. TOTAL NUMBER CORE BOXES 6			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 627.4 (24 hrs.)		16. DATE HOLE STARTED 5-25-84 COMPLETED 5-29-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 675.1			
8. DEPTH DRILLED INTO ROCK Concrete 50.0				18. TOTAL CORE RECOVERY FOR BORING 97 %			
9. TOTAL DEPTH OF HOLE 57.7				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.1	0	b	c	d	e	f	g
	2		Concrete	93	Box 1	Pull 1 From 0.0 to 2.7 Run 2.7 Rec 2.5 C.L. 0.2 Time 1:48-1:55 Tape depth 2.6'	
672.4	4		Occasional aggregate voids 4.4'-5.8'	104		Pull 2 From 2.7 to 7.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:29-9:40 Note: 100% return drill water- gray color Tape depth 7.7'	
667.4	8		Occasional aggregate voids 8.3'-8.6'	98		Pull 3 From 7.7 to 12.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:46-9:52	
	10					11.0'	
662.4	12				Box 2	Tape depth 12.6'	
						Pull 4 From 12.7 to 17.7 Run 5.0	
661.1	14						
Continued on sheet #2							

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 30A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 4 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVER ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661.1	14b	c	d	e	f	g
			Concrete (Continued)	102	Box 2	Pull 4 (Continued) Rec 5.1 C.L. 0.0 Time 10:00-10:07
	16					
657.4	18			96		Tape depth 17.6' Pull 5 From 17.7 to 22.7 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:15-10:24
	20					
	22				22.0'	
652.4	24			104	Box 3	Tape depth 22.0' Pull 6 From 22.7 to 27.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:31-10:40
	26					
647.4	28			96		Tape depth 27.7' Pull 7 From 27.7 to 32.7 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:47-10:58
	30					
643.1	32					
			C-83			
			Continued on sheet #3			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 30A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 04 3 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
643.1	32				Box 3	Pull 7 (Continued)
642.4			Concrete (Continued)		32.2	Tape depth 32.5'
	34			104	Box 4	Pull 8 From 32.7 to 37.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:04-11:15
	36					
637.4	38			98		Tape depth 37.7' Pull 9 From 37.7 to 42.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:22-11:33
	40					
	42					
632.4						Tape depth 42.6'
	44			102	Box 5	Pull 10 From 42.7 to 47.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 12:31-12:46
	46		Machine break 46.3'			
627.4	48			C-84 100		Tape depth 47.7' Pull 11 From 47.7 to 52.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:53-1:05
625.1	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.1		Hole No. 30A		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 4 OF 4 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
625.1	50.0		Concrete panel, earth fill interface (0-2" deep) 50.0'-57.7'		Box 5	Pull 11 (Continued) Note: 100% return drill water, gray color then brown color at approx. depth 49.0'
622.4	52					Tape depth 52.7'
	54		Machine break 53.9'	60		Pull 12 From 52.7 to 57.7 Run 5.0 Rec 3.0 C.L. 2.0 Time 1:15-1:23
	56				Box 6	
617.4	58		Bottom of hole 57.7'			Note: 5-29-84 water level after drilling 33.5'
						5-31-84 water level 24hrs. after drilling 47.7'

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 4 SHEETS	
1. PROJECT Clemson Upper Diversion Dam		South Atlantic		Hartwell Lake			
2. LOCATION (Coordinates or Station) STA. 9+92				10. SIZE AND TYPE OF BIT H0 Diamond			
3. DRILLING AGENCY Froehling and Robertson				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
4. HOLE NO. (As shown on drawing title and file number) 30B				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
5. NAME OF DRILLER Tommy Burnette				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED	UNDISTURBED
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				14. TOTAL NUMBER CORE BOXES 7			
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER 646.4 (24hrs.)			
8. DEPTH DRILLED INTO Concrete 67.5				16. DATE HOLE STARTED 5/31/84 COMPLETED 6/1/84			
9. TOTAL DEPTH OF HOLE 67.5				17. ELEVATION TOP OF HOLE 675.1			
				18. TOTAL CORE RECOVERY FOR BORING 100 %			
				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.1	0						
	2		Segregated aggregate zone 0.0-1.8'	88	Box 1		Pull 1 From 0.0 to 2.5 Run 2.5 Rec 2.3 C.L. 0.2 Time 2:10-2:17
672.6	4		Concrete				Tape depth 2.3'
	6		Poorly cemented aggregate (0-1/4" deep) 4.1'-6.1'	104			Pull 2 From 2.5 to 7.5 Run 5.0 Rec 5.2 C.L. 0.0 Time 2:23-2:30 Note: 100% return drill water-gray color
667.6	8						Tape depth 7.5'
	10		Aggregate void (1/2" deep) 9.9'	98			Pull 3 From 7.5 to 12.5 Run 5.0 Rec 4.9 C.L. 0.0 Time 2:35-2:42
	12		Poorly cemented aggregate zone (0-1/4" deep) 10.1'-11.5'		11.2		
662.6	14		Poorly cemented aggregate zone 12.6'-18.5' (0-1 1/2" deep)		Box 2		Tape depth 12.5'
661.1							Pull 4 From 12.6 to 17.5 Run 5.0

Continued on sheet #2

PROJECT		ELEVATION TOP OF HOLE		Hole No.		
INSTALLATION		SHEET		OF 4 SHEETS		
Clemson Upper Diversion Dam		Hartwell Lake		308		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661.1	14b	c	d	e	f	g
657.6	16		Poorly cemented aggregate zone (0-1½" deep) 12.6'-18.5'	100	Box 2	Pull 4 (Continued) Rec 5.0 C.L. 0.0 Time 2:51-3:04 Note: 5 minute down time to refill water tank
	18		Poorly cemented aggregate zone (0-½" deep) 18.5'-21.1'	104		Tape depth 17.3' Pull 5 From 17.5 to 22.5 Run 5.0 Rec 5.2 C.L. 0.0 Time 3:10-3:18
	20					
652.6	22				22.3'	Tape depth 22.5'
	24		Segregated aggregate zone 23.5'-25.0'	100	Box 3	Pull 6 From 22.5 to 27.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:24-3:31
	26		Poorly cemented aggregate zone (0-½" deep) 25.0'-30.0'			
647.6	28		Segregate aggregate zone 27.5'-31.5'	100		Tape depth 27.5' Pull 7 From 27.5 to 32.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:37-3:43
	30					
	32		Poorly cemented aggregate zone (0-½" deep) 31.0'-32.0'			
643.1						
Continued on sheet #3						

C-87

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.1		Hole No. 30B		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake			SHEET 3 OF 4 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.1	32b	c	d			g
642.6			Concrete (Continued) Segregated aggregate zone 32.5'-33.3'		32.5	Pull 7 (Continued) Tape depth 32.5'
	34			100	Box 4	Pull 8 From 32.5 to 37.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:47-9:57 Note: 100% return of drill water gray color
637.6	38			98		Tape depth 37.5' Pull 9 From 37.5 to 42.5 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:06-10:14
632.6	42				43.4'	Tape depth 42.4' Pull 10 From 42.5 to 47.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:24-10:33
	44			102	Box 5	
	46					
627.6	48			100		Tape depth 47.5' Pull 11 From 47.5 to 52.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:38-10:45
625.1	50					
Continued on sheet #4						

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE
675.1

Hole No. 30B

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

OF 4

4

SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.1	50.6	c	Concrete (Continued) Segregated aggregate zone 50.5'-54.5' Machine break 51.4'			Pull 11 (Continued)
622.6	52				Box 5	Tape depth 52.5'
	54			100	54.5'	Pull 12 From 52.5 to 57.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:51-10:58
	56		Machine break 55.9'		Box 6	
617.6	58					Tape depth 57.5'
	60			100		Pull 13 From 57.5 to 62.5 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:04-11:13
612.6	62					Tape depth 62.5'
	64			98		Pull 14 From 62.5 to 67.5 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:20-11:27 Note: 100% return of drill water gray color then brown at depth 65.0'
	66		Concrete panel-earth dike interface (0- $\frac{1}{2}$ " deep) 65.8'-67.5' Machine break 66.9'	0-89	Box 7	
607.6					67.5'	Tape depth 67.4'
			Bottom of hole 67.5'			Note: 6-1-84 water level after drilling 25.0'. 6-4-84 water level after 24hrs

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 4 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 9+93				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 30C				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 6			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 634.1 (24hrs)		16. DATE HOLE STARTED 6-1-84 COMPLETED 6-4-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 675.1			
8. DEPTH DRILLED INTO Concrete 62.4				18. TOTAL CORE RECOVERY FOR BORING 100 %			
9. TOTAL DEPTH OF HOLE 62.4				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
675.1	0		Concrete			
	2			96	Box 1	Pull 1 From 0.0 to 2.4 Run 2.4 Rec 2.3 C.L. 0.1 Time 1:58-2:06 Tape depth 2.3'
672.7	4			98		Pull 2 From 2.4 to 7.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:11-2:18 Note: 100% return of drill water, gray color Tape depth 7.3'
667.7	8		Segregated aggregate zone 8.2'-8.8'	104		Pull 3 From 7.4 to 12.4 Run 5.0 Rec 5.2 C.L. 0.0 Time 2:22-2:30
	10				11.0'	
662.7	12			0.90	Box 2	Tape depth 12.4'
	14					Pull 4 From 12.4 to 17.4 Run 5.0
661.1						

Continued on sheet #2

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 30C	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 4 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661.1	14.6	c	d	e	f	g
			Concrete (Continued)		Box 2	Pull 4 (Continued) Rec 4.9 C.L. 0.1 Time 2:40-2:48 Note: Changed bits at depth 12.4' to decrease drill time
	16			98		Tape depth 17.3'
657.1	18					Pull 5 From 17.4 to 22.4 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:32-9:40
	20					
	22				21.9'	Tape depth 22.5'
652.7	24				Box 3	Pull 6 From 22.4 to 27.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:46-9:54
	26			98		
	28					Tape depth 27.4'
647.7	30					Pull 7 From 27.4 to 32.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:59-10:06
	32			102		
			Machine break 30.9'	0.91		
643.1						

Continued on sheet #3

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 30C	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 4 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.1	32	c				
642.7			Concrete (Continued)		32.4'	Pull 7 (Continued) Tape depth 32.5'
	34			98	Box 4	Pull 8 From 32.4 to 37.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:12-10:21
	36					
637.7						Tape depth 37.4'
	38			102		Pull 9 From 37.4 to 42.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:28-10:38
	40					
	42					Tape depth 42.5'
632.4						Pull 10 From 42.4 to 47.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:45-10:54
	44			98	43.7' Box 5	
	46					
	48			102 C-92		Tape depth 47.4'
627.4						Pull 11 From 47.4 to 52.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:01-11:12
625.1	50					

Continued on sheet #4

DRILLING LOG -(Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 30C		
PROJECT		INSTALLATION		SHEET 4		
Clemson Upper Diversion Dam		Hartwell Lake		OF 4 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant.)
625.1	50	c	d	e	f	g
622.4			Concrete (Continued)		Box 5	Pull 11 (Continued)
	52					Tape depth 52.5'
				96	54.7'	Pull 12 From 52.4 to 57.4 Run 5.0 Rec 4.8 C.L. 0.2 Time 11:31-11:43 Note: Changed from bottom discharge to face discharge bit at depth 52.4'
617.4	54					
	56				Box 6	Tape depth 57.4'
	58					Pull 13 From 57.4 to 62.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:49-11:58 Note: 100% return drill water gray color then brown at depth 59.0'
	60		Machine break 58.7' Concrete panel-earth dike interface 58.7'- 62.4' (0"-1" deep)	98		
			Machine break 60.2'			
			Machine break 60.5'			
			Machine break 61.0'			
			Machine break 61.5'			
			Machine break 61.8'			
612.4	62				62.4'	Tape depth 62.3'
			Bottom of hole 62.4'			Note: 6-4-84 water level after drilling 18.8' 6-5-84 water level 24hrs. after drill- ing 41.0'
				C-93		

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		Hole No. 30D SHEET 1 OF 5 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 9+87				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 30D				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 8			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER Not measurable		16. DATE HOLE	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 674.7		18. TOTAL CORE RECOVERY FOR BORING 100 %	
8. DEPTH DRILLED INTO Rock Concrete 80.7				19. SIGNATURE OF INSPECTOR			
9. TOTAL DEPTH OF HOLE 80.7				Nancy Rector (Engineer)			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
674.7	0		Loose aggregate zone 0.0'-0.2'			Pull 1
			Concrete		Box 1	From 0.0 to 4.0
			Machine break 1.5'	100		Run 4.0
	2					Rec 4.0
						C.L. 0.0
						Time 2:05-2:16
						Note: 100% return
						drill water-gray
						color
670.7	4		Poorly cemented aggregate zone (0-3/8" deep) 4.0'-4.5'			Tape depth 4.0'
			Machine break 5.4'	98		Pull 2
	6					From 4.0 to 9.0
			Machine break 6.7'			Run 5.0
						Rec 4.9
	8					C.L. 0.1
			Machine break 8.4'			Time 2:23-2:32
665.7	10		Machine break 10.0'	100		Tape depth 8.9'
					11.2	Pull 3
						From 9.0 to 14.0
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 9:21-9:33
	12		Segregated aggregate zone 12.4'-13.1'	0-94	Box 2	
660.7	14					Tape depth 13.9'

Continued on sheet #2

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30D	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.7	14b	c	d			
			Concrete (Continued)			Pull 4
					Box 2	From 14.0 to 19.0
				100		Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 9:39-9:52
	16		Machine break 16.3'			
	18		Aggregate void (½" deep) 18.2'			
655.7			Poorly cemented aggre- gate zone (0-3/8" deep) 18.9'-19.5'			Tape depth 18.9'
						Pull 5
						From 19.0 to 24.0
						Run 5.0
	20		Machine break 20.0'			Rec 5.1
				102		C.L. 0.0
						Time 9:59-10:12
					22.0'	
	22					
					Box 3	
650.7			Machine break 23.6'			Tape depth 24.0'
	24		Poorly cemented aggre- gate zone (0-3/8" deep) 23.6'-24.0'			Pull 6
						From 24.0 to 29.0
						Run 5.0
				100		Rec 5.0
						C.L. 0.0
	26		Poorly cemented aggre- gate zone (0-3/8" deep) 26.5'-27.5'			Time 10:19-10:30
			Machine break 27.6'			
	28					
645.7						Tape depth 29.0'
						Pull 7
						From 29.0 to 34.0
						Run 5.0
	30					Rec 4.9
				98		C.L. 0.1
						Time 10:35-10:44
642.7	32					
			Continued on sheet #3			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30D	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET OF 5 SHEETS 4
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
624.7	50	c	Machine break 50.1'	100	Box 5	Pull 11 (Continued) Run 5.0 Rec 5.0 C.L. 0.0 Time 11:47-11:59
			Concrete (Continued)			
	52		Machine break 51.9'			
620.7	54				54.0'	Tape depth 53.9'
	56			102	Box 6	Pull 12 From 54.0 to 59.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 12:57-1:08
	58		Machine break 57.9'			
615.7						Tape depth 59.0'
	60		Machine break 60.0'	100		Pull 13 From 59.0 to 64.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:16-1:30
	62					
			Machine break 63.1'			
610.7	64				64.8'	Tape depth 64.0'
	66			100	Box 7	Pull 14 From 64.0 to 69.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:40-1:51 2:00-2:05 Note: 9 minute down time to check drill rig engine problems
606.7	68		Machine break 67.7'			
			Continued on sheet #5			

C-97

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30D	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 5 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
606.7	68b	c	d			g
			Concrete (Continued)			Pull 14 (Continued)
						Tape depth 69.0'
605.7						Pull 15
	70			100	Box 7	From 69.0 to 74.0
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 2:16-2:36
	72					
						Tape depth 74.0'
600.7	74			98		Pull 16
						From 74.0 to 79.0
						Run 5.0
						Rec 4.9
					75.7'	C.L. 0.1
	76		Machine break 76.3'			Time 9:12-9:23
			Loose aggregate-clay			Note: drill water
			bentonite intrusion			color change from
			zone 76.3'-79.7'			gray to tan at depth
						78.0'
	78					Tape depth 78.9'
595.7						Pull 17
						From 79.0 to 80.7
						Run 1.7
						Rec 1.8
						C.L. 0.0
	80		Machine break 80.2'	106	80.7'	Time 9:41-9:45
			Concrete panel-earth			Note: drill water
			dike interface (0-1/2"			color change from
			deep) 80.2'-80.7"			tan to gray at depth
			Bottom of concrete 80.7'			80'
	82		Bottom of hole 80.7'			Tape depth 80.6'
						Note: 6-20-84 water
						level after drill-
						ing 12.5'
						6-21-84 water level
						at 24hrs. not
						measurable due to
						drill water overflow
						from hole #30E

C-98

DRILLING LOG		DIVISION		INSTALLATION		SHEET	
		South Atlantic		Hartwell Lake		1	
1. PROJECT				10. SIZE AND TYPE OF BIT		OF 5 SHEETS	
Clemson Upper Diversion Dam				HQ Diamond			
2. LOCATION (Coordinates or Station)				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
STA. 9+83				MSL			
3. DRILLING AGENCY				12. MANUFACTURER'S DESIGNATION OF DRILL			
Froehling and Robertson				CME 55			
4. HOLE NO. (As shown on drawing title and file number)		30E		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER		Tommy Burnette		14. TOTAL NUMBER CORE BOXES		7	
6. DIRECTION OF HOLE		<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		Not measurable	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED COMPLETED	
				6-20-84		6-21-84	
8. DEPTH DRILLED INTO ROCK Concrete 69.0				17. ELEVATION TOP OF HOLE		674.7	
9. TOTAL DEPTH OF HOLE 69.0				18. TOTAL CORE RECOVERY FOR BORING		100 %	
				19. SIGNATURE OF INSPECTOR		Nancy Rector (Engineer)	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
674.7	0 b		Concrete				
			Segregate aggregate zone 0.7'-2.2'	92	Box 1	Pull 1 From 0.0 to 4.0 Run 4.0 Rec 3.7 C.L. 0.3 Time 1:04-1:14 Note: 100% return drill water-gray color	
	2		Machine break 2.2'				
670.7	4		Machine break 4.3'	100		Tape depth 3.7' Pull 2 From 4.0 to 9.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:22-1:34 Note: Changed from Longyear to Truco bottom discharge bit at depth 4.0'	
	6		Machine break 6.2'				
			Poorly cemented aggregate (0-3/4" deep) 6.2'-13.8'				
	8		Machine break 7.2'				
			Machine break 7.9'				
			Machine break 8.2'				
665.7	10		Machine break 10.0'	102	10.7'	Tape depth 8.7' Pull 3 From 9.0 to 14.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:40-1:55	
	12		Machine break 12.9'		Box 2		
660.7	14					Tape depth 13.8'	

Continued on sheet #2

PROJECT		ELEVATION TOP OF HOLE		Hole No.		
Clemson Upper Diversion Dam		674.7		30E		
INSTALLATION		SHEET		2		
Hartwell Lake		OF 5		SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
660.7	14	c	d	e	f	g
			Poorly cemented aggregate zone (0-3/8" deep) 14.2'-16.1'		Box 2	Pull 4 From 14.0 to 19.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 2:00-2:16
	16		Concrete (Continued)	102		
	18		Machine break 18.0'			
655.7						Tape depth 18.9'
	20		Machine break 21.1'	98		Pull 5 From 19.0 to 24.0 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:22-2:42
	22		Machine break 22.3'		Box 3	
650.7	24		Machine break 24.6'			Tape depth 23.3'
			Machine break 25.3'			Pull 6 From 24.0 to 29.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:19-9:42
	26		Machine break 26.2'	102		
			Machine break 27.6'			
	28		Machine break 27.9'			
			Machine break 28.1'			
			Machine break 28.3'			
			Machine break 28.5'			
645.7						Tape depth 28.9'
	30			104		Pull 7 From 29.0 to 34.0 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:55-10:15
			Machine break 31.3'			
642.7	32					
Continued on sheet #3						

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30E	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
642.7	32b	c	Machine break 32.0'		32.6	Pull 7 (Continued)
			Machine break 32.9'			
			Concrete (Continued)			
640.7	34					Tape depth 34.0'
					Box 4	Pull 8
						From 34.0 to 39.0
						Run 5.0
						Rec 5.0
						C.L. 0.0
				100		Time 10:24-10:41
	36					
			Machine break 36.7'			
	38					
635.7						Tape depth 39.0'
						Pull 9
						From 39.0 to 44.0
						Run 5.0
						Rec 4.8
						C.L. 0.2
				96		Time 10:44-11:06
			Poorly cemented aggregate zone (0-3/4" deep) 41.3'-42.7'			
	42		Machine break 41.9'			
			Machine break 43.4'		43.4'	
630.7	44					Tape depth 43.8'
			Machine break 44.6'			Pull 10
			Machine break 44.9'		Box 5	From 44.0 to 49.0
			Machine break 45.3'			Run 5.0
			Machine break 45.7'			Rec 5.2
				104		C.L. 0.0
	46					Time 11:15-11:35
			Machine break 46.9'			Note: check drilling
			Machine break 47.2'			rig carburetor for
						malfunction at depth
						49.0'
	48		Machine break 48.0'			
			Machine break 48.4'			
625.7						Tape depth 49.0'
				C-101		Pull 11
						From 49.0 to 54.0
624.7	50					
			Continued on sheet #4			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
PROJECT		INSTALLATION		SHEET		
Clemson Upper Diversion Dam		Hartwell Lake		4 OF 5 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
624.7	50b	c	d	e	f	g
	52		Concrete (Continued)	98	Box 5	Pull 11 (Continued) Run 5.0 Rec 4.9 C.L. 0.1 Time 11:44-12:01
			Machine break 53.3'			
620.7	54				54.0	Tape depth 53.9'
	56		Machine break 56.5'	100	Box 6	Pull 12 From 54.0 to 59.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:45-1:01
	58					Tape depth 58.9'
615.7	60		Machine break 60.5'	102		Pull 13 From 59.0 to 54.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:08-1:23
	62					Tape depth 64.0'
610.7	64				64.7	Pull 14 From 64.0 to 69.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:30-1:50 Note: drill water color change from gray to tan at dept 68.0'
	66		Machine break 66.0'	100	Box 7	
			Machine break 66.8'			
			Concrete panel-earth dike interface (0-1/2" deep) 67.5'-69.0'	C-102		
606.7	68					
Continued on sheet #5						

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

674.7

Hole No. 30E

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

5

OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
606.7	68b	c	d	e	f	g
605.7	70		Concrete panel-earth dike interface (0-1/2" deep) 67.5'-69.5' Machine break 68.5'		Box 7 69.0'	Pull 14 (Continued) Tape depth 69.0'
			Bottom of hole 69.0'			Note: 6-21-84 water level after drilling 17.8'
						6-25-84 water level not measurable due to overflow from adjacent drill hole

C-103

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Hartwell Lake		SHEET 1 OF 5 SHEETS
1. PROJECT Clemson Upper Diversion Dam			10. SIZE AND TYPE OF BIT HQ Diamond		
2. LOCATION (Coordinates or Station) STA. 9+81			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL		
3. DRILLING AGENCY Froehling and Robertson			12. MANUFACTURER'S DESIGNATION OF DRILL CME 55		
4. HOLE NO. (As shown on drawing title and file number) 30F			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED
5. NAME OF DRILLER Tommy Burnette			14. TOTAL NUMBER CORE BOXES 7		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER 625.0 (24hrs.)		
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 6-21-84 COMPLETED 6-25-84		
8. DEPTH DRILLED INTO ROCK Concrete 72.4'			17. ELEVATION TOP OF HOLE 675.0		
9. TOTAL DEPTH OF HOLE 74.1'			18. TOTAL CORE RECOVERY FOR BORING 98 %		
			19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
675.0	0					
	2		Segregated aggregate zone 0.0'-0.4'			Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.0 C.L. 0.2 Time 2:56-3:05 Note: use Longyear diamond drill bit
			Concrete	95	Box 1	
670.8	4		Machine break 3.0' Poorly cemented and segregated aggregate zone 3.0'-4.0'			Tape depth 4.0'
	6		Poorly cemented segre- gated and loose aggre- gate zone 6.6'-9.0'	100		Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:09-3:18
665.8			Poorly cemented aggre- gate zone (0-3/8" deep) 9.0'-14.0'		9.2'	Tape depth 9.0'
	10		Machine break 10.4'	100	Box 2	Pull 3 From 9.2 to 14.1 Run 4.9 Rec 4.9 C.L. 0.1 Time 9:32-9:41 Note: 100% return drill water gray color. Moved rig jack up .1' reduced first run of day to 4.9'
661.0	14					

C-104

Continued on sheet #2

PROJECT		ELEVATION TOP OF HOLE		Hole No.		
Clemson Upper Diversion Dam		675.0		30F		
INSTALLATION		SHEET				
Hartwell Lake		2				
CLASSIFICATION OF MATERIALS		REMARKS				
(Description)	(Drilling time, water loss, depth of weathering, etc., if significant)					
661.0	14b	c	d	% CORE RECOVERY	BOX OR SAMPLE NO.	g
660.9	14b	c	Poorly cemented aggregate zone (0-3/8" deep) 14.0'-23.3'	106	Box 2	Pull 3 (Continued) Tape depth 14.0' Pull 4 From 14.1 to 19.1 Run 5.0 Rec 5.3 C.L. 0.0 Time 9:46-9:56
655.9	20	c		100	Box 3	Tape depth 19.1' Pull 5 From 19.1 to 24.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:01-10:12
650.9	24	c	Concrete (Continued)	98		Tape depth 24.1' Pull 6 From 24.1 to 29.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:16-10:27
	28	c	Machine break 28.0'			
645.9	30	c		100	Box 4	Tape depth 29.0' Pull 7 From 29.2 to 34.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:33-10:44
643.0	32	c				

Continued on sheet #3

Continued on sheet #3

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE		Hole No. 30F	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.0	32b	c	d	e	f	g
			Concrete			Pull 7 (Continued)
640.9	34				Box 4	Tape depth 34.0'
						Pull 8 From 34.1 to 39.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:49-11:04
	36		Machine break 35.4'	100		
	38					
635.9						Tape depth 39.0'
	40			100		Pull 9 From 39.1 to 44.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:09-11:29
	42				41.4'	
					Box 5	
630.9	44		Machine break 43.9'			Tape depth 44.0'
			Segregated aggregate zone 44.5'-52.0'			Pull 10 From 44.1 to 49.1 Run 5.0 Rec 5.2 C.L. 0.0 Time 11:36-11:51
	46		Machine break 46.0'	104		
	48					
						Tape depth 49.1'
625.9						Pull 11 From 49.1 to 54.1
625.0	50					
			Continued on sheet #4			

PROJECT		ELEVATION TOP OF HOLE		Hole No.	
Clemson Upper Diversion Dam		675.0		30F	
INSTALLATION		SHEET			
Hartwell Lake		4			
CLASSIFICATION OF MATERIALS		REMARKS			
(Description)	(Drilling time, water loss, depth of weathering, etc., if significant)				
ELEVATION	DEPTH				
a	b				
c	d				
e	f				
g	h				
625.0	50.0	Segregated aggregate zone 44.5'-52.0'	Box 5	Pull 11 (Continued)	
				Run 5.0	
				Rec 5.0	
				C.L. 0.0	
				Time 12:46-1:03	
	52.0	Machine break 51.6'	51.6'		
		Concrete (Continued)			
			Box 6		
620.9	54.0			Tape depth 54.1'	
				Pull 12	
				From 54.1 to 59.1	
				Run 5.0	
				Rec 5.0	
				C.L. 0.0	
				Time 1:10-1:25	
	56.0				
	58.0				
615.9	60.0			Tape depth 59.1'	
				Pull 13	
				From 59.1 to 64.1	
				Run 5.0	
				Rec 5.0	
				C.L. 0.0	
				Time 1:32-1:46	
	62.0		62.2'		
			Box 7		
610.9	64.0			Tape depth 64.1'	
		Poorly cemented aggregate zone 64.5'-64.9' (0-1/2" deep)		Pull 14	
		Clay bentonite seam 64.9'		From 64.1 to 69.1	
				Run 5.0	
				Rec 4.9	
				C.L. 0.1	
				Time 1:52-2:04	
				Note: drill water color change from gray to light brown at depth 57.0'	
	66.0	Concrete panel-earth dike interface (0-1" deep) 66.7'-72.4'	98		
		Machine break 67.3'	C-107		
607.0	68.0				

Continued on sheet #5

Continued on sheet #5

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE		Hole No.	
PROJECT			675.0		30F	
Clemson Upper Diversion Dam			INSTALLATION		SHEET 5	
			Hartwell Lake		OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		c	d	e	f	g
6074.0	68.0		Concrete panel-earth dike interface (0-1" deep) 66.7'-72.4'		Box 7	Pull 14 (Continued)
605.9			Machine break 69.2'			Tape depth 68.8'
	70		Machine break 70.0'	68		Pull 15
			Machine break 70.4'			From 69.1 to 74.1
			Machine break 70.7'			Run 5.0
			Machine break 71.4'			Rec 3.4
	72		Machine break 72.2'			C.L. 1.6
						Time 2:13-2:28
						Note: drill water
						color change from
						light brown to gray
						at depth 69.5'; then
						brown at depth 70.5'
600.9	74		Bottom of hole 74.1'			Tape depth 73.9'
						Note: 6-25-84 water
						level after drilling
						48.0'
	76					6-26-84 water level
						24hrs. after drilling
						ing 50.0'

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 6 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 9+89				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 30G				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 8			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 625.4 (24hrs.)		16. DATE HOLE STARTED 6-26-84 COMPLETED 6-27-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 674.7'			
8. DEPTH DRILLED INTO ROCK Concrete 81.7				18. TOTAL CORE RECOVERY FOR BORING 91 %			
9. TOTAL DEPTH OF HOLE 89.3				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
674.7	0 b	c	d	e	f	g	
670.4	2		Poorly cemented aggregate (0-3/8" deep) 0.0'-2.0'	98	Box 1	Pull 1 From 0.0 to 4.3 Run 4.3 Rec 4.2 C.L. 0.1 Time 10:45-10:56 Note: 100% return drill water-gray color	
	4		Concrete Machine break 3.8'			Tape depth 4.3'	
665.4	6		Machine break 6.7'	98		Pull 2 From 4.3 to 9.3 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:00-11:07	
	8					Tape depth 9.2'	
660.7	10			98	11.1'	Pull 3 From 9.3 to 14.3 Run 5.0 Rec 4.9 C.L. 0.1 Time 11:11-11:20	
	12					Machine break 12.9'	Box 2
	14						

Continued on sheet #2

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.7		Hole No. 30G	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	14b	c	d	e	f	g
660.7	14		Concrete (Continued)			Pull 3 (Continued) Tape depth 14.1'
	16			100	Box 2	Pull 4 From 14.3 to 19.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:24-11:34
	18		Machine break 18.2'			
655.4	20			100		Tape depth 19.0' Pull 5 From 19.3 to 24.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:27-12:51 Note: changed bits at depth 19.3' to decrease drilling time.
	22		Machine break 22.0'		21.5'	
	24		Machine break 23.5'		Box 3	Tape depth 24.0'
650.4	26			104		Pull 6 From 24.3 to 29.3 Run 5.0 Rec 5.2 C.L. 0.0 Time 1:04-1:16 Note: changed bits at depth 24.3' to decrease drilling time.
	28					
645.4	30			100		Tape depth 29.2' Pull 7 From 29.3 to 34.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:21-1:33
642.7	32					
Continued on sheet #3						

C-110

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE	Hole No.			
		674.7	30G			
PROJECT	INSTALLATION	SHEET				
Clemson Upper Diversion Dam	Hartwell Lake	3				
		OF 6 SHEETS				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
642.7	32.0	c			32.3	Pull 7 (Continued)
			Concrete (Continued)			
			Machine break 33.2'		Box 4	
640.4	34.0					Tape depth 34.2'
						Pull 8
						From 34.3 to 39.3
						Run 5.0
						Rec 4.9
				98		C.L. 0.1
						Time 1:40-1:52
			Machine break 37.9'			
635.4	38.0					Tape depth 39.0'
						Pull 9
						From 39.3 to 44.3
						Run 5.0
						Rec 5.1
						C.L. 0.0
				102		Time 1:57-2:10
					42.8'	
630.4	44.0				Box 5	Tape depth 44.2'
						Pull 10
			Poorly cemented aggregate (0-3/8" deep) 45.0'-45.7'			From 44.3 to 49.3
						Run 5.0
						Rec 5.0
				100		C.L. 0.0
						Time 2:15-2:28
			Machine break 47.5'			
						Tape depth 49.2'
624.7	50.0					Pull 11

C-III

Continued on sheet #4

Continued on sheet #4

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 30G		
PROJECT		INSTALLATION		SHEET 4		
Clemson Upper Diversion Dam		Hartwell Lake		OF 6 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
624.7	50	c	d			
	52		Concrete (Continued)	100	Box 5	Pull 11 (Continued) From 49.3 to 54.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:36-2:48
	54				53.7	
620.4						Tape depth 54.2
	56			100	Box 6	Pull 12 From 54.3 to 59.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:09-9:25
	58					
615.4						Tape depth 59.2
	60			100		Pull 13 From 59.3 to 64.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:39-9:52
	62					
			Machine break 63.2'			
610.4	64				64.3	Tape depth 64.2
	66			104	Box 7	Pull 14 From 64.3 to 69.3 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:58-10:13
			C-112			
606.7	68					
Continued on sheet #5						

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE	Hole No.			
		674.7	30G			
PROJECT	INSTALLATION	SHEET				
Clemson Upper Diversion Dam	Hartwell Lake	5	OF 6 SHEETS			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
606.7	68	c				
			Concrete (Continued)			Pull 14 (Continued)
605.4					Box 7	Tape depth 69.4'
	70		Machine break 70.7'	100		Pull 15 From 69.3 to 74.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:43-10:57 Note: changed from bottom discharge to face discharge bit at depth 69.3'
	72		Machine break 72.1'			
			Machine break 73.0'			
600.4	74					Tape depth 74.4'
					75.1'	Pull 16 From 74.3 to 79.3 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:04-11:17
	76		Machine break 77.3'	100	Box 8	
	78		Machine break 79.0'			
595.4						Tape depth 79.4'
	80		Concrete panel-earth dike interface (0-3/4" deep) 80.7'-81.7'	46		Pull 17 From 79.3 to 84.3 Run 5.0 Rec 2.3 C.L. 2.7 Time 11:24-11:35 Note: drill water color change from gray to brown sandy water at depth 83.0' Tape depth 81.2' (before wash)
	82		Bottom of concrete 81.7'			
590.4	84					Tape depth 84.2
						Pull 18 From 84.3 to 89.3 Run 5.0
588.7	86					
Continued on sheet #6						

Continued on sheet #6

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

674.7

Hole No. 30G

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

6

OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
588.7	86	c	d	e	f	g
	88			0	Box 8	Pull 18 (Continued) Rec 0.0 C.L. 5.0 Time 12:09-12:15 Note: unable to retrieve material left in barrel after pull 17- removed inner barrel and washed all meterial left in outer barre out of barrel before drilling for pull 18
585.4	90		Bottom of hole 89.3'		89.3	Tape depth 89.0' Note: 6-27-84 water level after drill- ing 39.7' 6-28-84 water level 24 hrs. after drill ing 49.3'

C-114

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 5 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 9+82				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 30H				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 8			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 628.0' (24hrs.)			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 6-27-84 COMPLETED 6-28-84			
8. DEPTH DRILLED INTO <u>Concrete</u> 81.6				17. ELEVATION TOP OF HOLE 675.0'			
9. TOTAL DEPTH OF HOLE 83.7				18. TOTAL CORE RECOVERY FOR BORING 99 %			
				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.0	0	b	c	d	e	f	g
			Segregated concrete zone 0.0'-1.7'			Pull 1	
			Machine break 0.7'			From 0.0 to 3.7	
			Machine break 1.2'	97	Box 1	Run 3.7	
	2		Poorly cemented aggregate zone (0-1" deep) and aggregate voids 1.9'-3.3'			Rec 3.6	
			Machine break 3.3'			C.L. 0.1	
671.3						Time 2:27-2:37	
	4		Concrete			Tape depth 3.5'	
			Poorly cemented aggregate zone (0-1/2" deep) 4.0'-7.9'			Pull 2	
			Machine break 4.4'	102		From 3.7 to 8.7	
	6					Run 5.0	
						Rec 5.1	
	8		Machine break 7.9'			C.L. 0.0	
666.3			Segregated aggregate zone 7.9'-9.1'			Time 2:41-2:50	
			Poorly cemented aggregate zone (0-3/8" deep) 8.9'-17.7'			Note: 100% return drill water-gray color	
	10					Tape depth 8.7'	
						Pull 3	
	12					From 8.7 to 13.7	
				94		Run 5.0	
						Rec 4.8	
	14					C.L. 0.2	
661.3						Time 2:54-3:01	
661.0					Box 2		
						Tape depth 13.5'	
						Pull 4	

Continued on sheet #2

PROJECT		ELEVATION TOP OF HOLE		Hole No.		SHEET	
Clemson Upper Diversion Dam		675.0		30H		2	
INSTALLATION		Hartwell Lake		OF 5 SHEETS			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
661.0	14b	c	d	e	f	g	
661.0	16		Poorly cemented aggregate zone (0-3/8" deep) 8.9'-17.7'	100	Box 2	Pull 4 (Continued) From 13.7 to 18.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:46-9:57 Note: install new Longyear bit at depth 13.7'	
	18		Machine break 17.3'				
			Concrete (Continued)				
	18.5					Tape depth 18.5'	
656.3	20			104		Pull 5 From 18.7 to 23.7 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:02-10:10	
	22						
	21.7						
	21.7						
651.3	24				Box 3	Tape depth 23.7'	
	26		Poorly cemented aggregate zone (0-3/8" deep) 25.0'-28.2'	96		Pull 6 From 23.7 to 28.7 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:15-10:23	
	28		Machine break 27.3'				
	28.5					Tape depth 28.5'	
646.3	30			102		Pull 7 From 28.7 to 33.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:27-10:36	
	32						
643.0	32						

C-116

Continued on sheet #3

Continued on sheet #3

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 30H		
PROJECT		INSTALLATION		SHEET 3		
Clemson Upper Diversion Dam		Hartwell Lake		OF 5 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.0	32b	c	d	e	f	g
			Concrete (Continued)		32.5	Pull 7 (Continued)
641.3	34				Box 4	Tape depth 33.6'
				100		Pull 8 From 33.7 to 38.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:45-10:56
	36					
	38					
636.3	40			100		Tape depth 38.6'
						Pull 9 From 38.7 to 43.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:01-11:13
	42		Machine break 41.8'			
					43.3	
631.3	44					Tape depth 43.6'
			Poorly cemented aggregate zone (0-3/4" deep) 45.0'-46.6'		Box 5	Pull 10 From 43.7 to 48.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:19-11:31
	46		Machine break 45.9'	102		
	48		Segregated aggregate zone 48.1'-49.3'			
626.3						Tape depth 48.7'
						Pull 11 From 48.7 to 53.7 Run 5.0
625.0	50					
Continued on sheet #4						

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 30H		
PROJECT		INSTALLATION		SHEET 4		
Clemson Upper Diversion Dam		Hartwell Lake		OF 5 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
625.0	50	c	d	e	f	g
			Concrete (Continued)	100	Box 5	Pull 11 (Continued) Rec 5.0 C.L. 0.0 Time 11:39-11:52
	52		Machine break 51.4' Segregated aggregate zone 51.4'-53.1'			
621.3	54				53.7'	Tape depth 53.7'
	56			100	Box 6	Pull 12 From 53.7 to 58.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:29-12:37 12:39-12:42 Note: 2 minute down time to move water hose and allow crane passage.
616.3	58					Tape depth 58.7'
	60			98		Pull 13 From 58.7 to 63.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 12:49-1:00
611.3	62					
	64		Machine break 63.2'			Tape depth 63.6'
	66		Machine break 64.8'		64.6'	Pull 14 From 63.7 to 68.7 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:07-1:19
	68			100	Box 7	
607.0						
Continued on sheet #5						

C-118

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. 30H

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

5
OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
6074.0	68b	c	d	e	f	g
606.3			Concrete (Continued)		Box 7	Pull 14 (Continued) Tape depth 68.6'
	70		Machine break 69.6'	102		Pull 15 From 68.7 to 73.7 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:49-2:00 Note: changed from bottom discharge to face discharge bit at depth 68.7'
	72		Machine break 71.6'			
			Machine break 72.5'			
601.3	74		Machine break 74.7'		75.2'	Tape depth 73.7'
	76		Machine break 77.0'	98	Box 8	Pull 16 From 73.7 to 78.7 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:09-2:18
	78		Machine break 77.9'			
596.3	80		Machine break 79.6'			Tape depth 78.6'
			Concrete panel-earthen dike interface (0-1" deep) 79.9'-81.6'	84		Pull 17 From 78.7 to 83.7 Run 5.0 Rec 4.2 C.L. 0.8 Time 2:26-2:34 Note: drill water color change from gray to brown at depth 83.0'
	82		Bottom of concrete 81.6'			
			Highly weathered gray- white gneiss, RQD=0% very poor rock quality 81.6'-83.7'			
591.3	84		Bottom of hole 83.7'		83.7'	Tape depth 83.7'
						Note: 7-2-84 water level 24hrs. after drilling 47.0' depth.

C-119

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT H0 Diamond			
2. LOCATION (Coordinates or Station) STA. 12+12				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 39				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 4			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. DATE HOLE 6-8-84		STARTED COMPLETED 6-13-84	
7. THICKNESS OF OVERBURDEN				16. ELEVATION GROUND WATER 669.8 (24hrs.)			
8. DEPTH DRILLED INTO ROCK Concrete 39.2				17. ELEVATION TOP OF HOLE 674.8			
9. TOTAL DEPTH OF HOLE 39.2				18. TOTAL CORE RECOVERY FOR BORING 100 %			
				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
674.8	0	c	d	e	f	g	
	2		Poorly cemented aggregate and loose aggregate zone 0.0'-1.1'			Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.2 C.L. 0.0 Time 9:46-9:55 Note: 100% return drill water-gray color	
	4		Concrete	100	Box 1	Tape depth 4.4'	
670.6	6		Machine break 5.1'	100		Pull 2 From 4.2 to 9.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:01-10:08	
	8					Tape depth 9.2'	
665.6	10					Pull 3 From 9.2 to 14.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:12-10:18	
	12		Poorly cemented aggregate zone (0-1/2" deep) 11.7'-18.5'	98	10.8		
	14		Machine break 12.2'		Box 2		
660.8							
Continued on sheet #2							

C-120

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
		674.8		39		
PROJECT			INSTALLATION		SHEET	
Clemson Upper Diversion Dam			Hartwell Lake		2	
					OF 3 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
660.8	14b	c	d	e	f	g
660.6			Poorly cemented aggregate (0-½" deep) 11.7'-18.5'		Box 2	Pull 3 (Continued)
	16		Machine break 15.9'	102		Pull 4 From 14.2 to 19.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:25-10:32
	18					
655.6						Tape depth 19.2'
	20			98	21.4'	Pull 5 From 19.2 to 24.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:37-10:45
	22				Box 3	
650.6	24					Tape depth 24.1'
	26			104		Pull 6 From 24.2 to 29.2 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:49-10:57
	28		Machine break 27.6'			
645.6					29.2'	Tape depth 29.3'
	30			98	Box 4	Pull 7 From 29.2 to 34.2 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:50-10:09
			C-121			
642.8	32					
Continued on sheet #3						

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 39		
PROJECT		INSTALLATION		SHEET 3 OF 3 SHEETS		
Clemson Upper Diversion Dam		Hartwell Lake				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
642.8	32b	c	d	e	f	g
640.6	34		Concrete (Continued) Machine break 33.3' Concrete panel-earth dike interface (0-3/4" deep) 33.3'-39.2'		Box 4	Pull 7 (Continued) Note: 7 minute downtime to refill water tank Tape depth 34.2'
	36		Machine break 36.0'	102		Pull 8 From 34.2 to 39.2 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:14-10:19 Note: 100% return drill water-gray color then brown at 33.0- depth
	38		Machine break 37.8'			
635.6					39.2	Tape depth 39.3'
	40		Bottom of hole 39.2'			Note: 6-12-84 water level measured after drilling 12.0 6-14-84 water level at 24hrs. 5.0'

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 12+11				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 39A				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 4			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 657.8 (24hrs.)			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE STARTED 6-13-84 COMPLETED 6-13-84			
8. DEPTH DRILLED INTO ROCK Concrete 39.1				17. ELEVATION TOP OF HOLE 675.1			
9. TOTAL DEPTH OF HOLE 39.1				18. TOTAL CORE RECOVERY FOR BORING 99 %			
				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.1	0	c	d				
	2		Segregated aggregate zone 0.0-1.1' Machine break 0.7'	100	Box 1	Pull 1 From 0.0 to 4.2 Run 4.2 Rec 4.2 C.L. 0.0	
670.9	4		Concrete			Tape depth 4.2'	
	6			98		Pull 2 From 4.2 to 9.1 Run 4.9 Rec 4.8 C.L. 0.1 Time 11:52-11:59 Note: adjusted drilling jack up 0.1'- Run length changed	
666.0	8		Poorly cemented aggregate (0-3/8" deep) 8.5'-9.7'			Tape depth 9.1'	
	10		Machine break 10.4'	102	10.4 Box 2	Pull 3 From 9.1 to 14.1 Run 5.0 Rec 5.1 C.L. 0.0	
661.1	14						
Continued on sheet #2							

C-123

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 39A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 3 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
661.1	14b	c	d			
			Concrete (Continued)			Pull 3 (Continued) Tape depth 14.1'
	16			100	Box 2	Pull 4 From 14.1 to 19.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:38-12:44 Note: 100% return drill water-gray color
	18		Machine break 17.5'			
656.0						Tape depth 19.1'
	20			100		Pull 5 From 19.1 to 24.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:50-12:56
	22		Machine break 22.4'		Box 3	
651.0	24					Tape depth 24.1'
	26			100		Pull 6 From 24.1 to 29.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:02-1:08
	28		Machine break 27.6'			
646.0						Tape depth 29.1
	30		Machine break 30.0'	100		Pull 7 From 29.1 to 34.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:13-1:19
			Machine break 31.3'	C-124		
643.1	32				32.0	
			Continued on sheet #3			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 39A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 3 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.1	32b	c	d			
			Concrete (Continued)		Box 4	Pull 7 (Continued)
641.0	34					Tape depth 34.1'
			Machine break 35.5'			Pull 8
	36		Machine break 36.7'			From 34.1 to 39.1
			Concrete panel-earth dike interface (0-3/4" deep) 36.8'-39.1'			Run 5.0
	38		Machine break 37.8'			Rec 4.8
						C.L. 0.2
						Time 1:26-1:32
						Note: 100% return drill water-gray color then brown at 36.0' depth
636.0						Tape depth 39.0'
	40		Bottom of hole 39.1'			Note: 6-13-84 water level at end of drilling 27.5'
						6-14-84 water level at 24hrs. 17.3'

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 4 SHEETS	
1. PROJECT		South Atlantic		Hartwell Lake			
2. LOCATION (Coordinates or Station)		Clemson Upper Diversion Dam		10. SIZE AND TYPE OF BIT HQ Diamond			
3. DRILLING AGENCY		Froehling and Robertson		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		MSL	
4. HOLE NO. (As shown on drawing title and file number)		39B		12. MANUFACTURER'S DESIGNATION OF DRILL		CME 55	
5. NAME OF DRILLER		Tommy Burnette		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
6. DIRECTION OF HOLE		<input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		14. TOTAL NUMBER CORE BOXES		6	
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER		654.6 (24hrs.)	
8. DEPTH DRILLED INTO CONC Concrete		57.5		16. DATE HOLE		STARTED 6-13-84 COMPLETED 6-14-84	
9. TOTAL DEPTH OF HOLE		59.5		17. ELEVATION TOP OF HOLE		675.1	
				18. TOTAL CORE RECOVERY FOR BORING		98 %	
				19. SIGNATURE OF INSPECTOR		Nancy Rector (Engineer)	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.1	0						
	2		Machine break 0.2' Machine break 0.5' Segregated aggregate zone 0.0'-1.0' Poorly cemented aggregate zone (0"-½" deep) 1.0'-2.2'	96	Box 1		Pull 1 From 0.0 to 4.5 Run 4.5 Rec 4.3 C.L. 0.2 Time 2:10-2:21 Note: 100% return drill water-gray color
670.6	4		Concrete				
	6			105			Tape depth 4.3' Pull 2 From 4.5 to 3.6 Run 4.1 Rec 4.3 C.L. 0.0 Time 2:29-2:35 Note: pump malfunction stop rig with .9' left on 5' run
666.5	8		Poorly cemented aggregate zone (0"-3/8" deep) 8.6'-9.0'	100			Tape depth 8.7' Pull 3 From 8.6 to 9.5 Run 0.9 Rec 0.9 C.L. 0.0 Time 9:34-9:37
665.6	10		Poorly cemented aggregate zone (0"-½" deep) 9.5'-12.0'				Tape depth 9.5'
	12			96	Box 2		Pull 4 From 9.5 to 14.5 Run 5.0 Rec 4.8 C.L. 0.2 Time 9:41-9:48
661.1	14						

Continued on sheet #2

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.1

Hole No. 39B

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 2

OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		c	d	e	f	g
661.1	14b					
660.6			Poorly cemented aggregate zone (0"-½" deep) 14.0'-24.7'			Pull 4 (Continued) Tape depth 14.3'
	16			102	Box 2	Pull 5 From 14.5 to 19.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:53-10:00 Note: 100% return drill water-gray color
	18		Machine break 17.7'			
655.6						Tape depth 19.4'
	20		Machine break 20.4'			Pull 6 From 19.5 to 24.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:03-10:11
	22			102	21.3'	
	24		Machine break 23.6'			
650.6						Tape depth 24.5'
	26			96	Box 3	Pull 7 From 24.5 to 29.5 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:16-10:25
	28		Machine break 26.7' Poorly cemented aggregate zone (¾"-3/8" deep) 26.4'-27.1'			
645.6						Tape depth 29.3'
	30			104		Pull 8 From 29.5 to 34.5 Run 5.0 Rec 5.2 C.L. 0.0 Time 10:35-10:45
643.1	32				31.9'	
			Continued on sheet #3			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 39B	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 3 OF 4 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.1	32b	c	d			
			Concrete (Continued)			Pull 8 (Continued)
			Machine break 33.4'		Box 4	
640.6	34					Tape depth 34.5'
						Pull 9
						From 34.5 to 39.5
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 10:53-11:01
	36			100		
			Machine break 37.8'			
	38					
			Machine break 39.0'			
635.6						Tape depth 39.5'
						Pull 10
						From 39.5 to 44.5
						Run 5.0
						Rec 4.8
						C.L. 0.2
						Time 11:09-11:19
	40			96		
	42					
			Machine break 43.2'		Box 5	
	44		Machine break 44.2'			
630.6			Machine break 44.4			Tape depth 44.3'
						Pull 11
						From 44.5 to 49.5
						Run 5.0
						Rec 5.1
						C.L. 0.0
						Time 11:26-11:36
	46			102		
			Machine break 47.7'			
	48					
625.6						Tape depth 49.4'
625.1	50					Pull 12
			Continued on sheet #4			

C-128

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.1

Hole No. 39B

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

4

OF 4 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.1	50.0	c	d			
	52		Concrete (Continued)	102	Box 5	Pull 12 (Continued) From 49.5 to 54.5 Run 5.0 Rec 5.1 C.L. 0.0 Time 11:43-11:54 Note: drill water color change from gray to brown at depth 54.0'
			Machine break 52.9'		52.9'	
620.6	54		Concrete panel-earth dike interface (0"-2") 53.7'-57.5'		Box 6	Tape depth 54.5'
	56		Machine break 56.2'	80		Pull 13 From 54.5 to 59.5 Run 5.0 Rec 4.0 C.L. 1.0 Time 12:42-12:53
	58		Dark brown silty sand with organics and wood chips 57.5'-59.5'			
615.6					59.5'	Tape depth 59.2'
	60		Bottom of hole 59.5'			Note: 6-14-84 water level after drill- ing 16.5'
						6-15-84 water level 24hrs. after drill- ing 20.5'

C-129

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 2 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) STA. 12+11				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 39C				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 2			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 663.6 (24hrs.)		16. DATE HOLE 6-14-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 675.1		18. TOTAL CORE RECOVERY FOR BORING 94 %	
8. DEPTH DRILLED INTO ROCK Concrete 14.6				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
9. TOTAL DEPTH OF HOLE 14.6							
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.01	0.6	c	Segregated aggregate zone 0.0-0.6'		Box 1	Pull 1 From 0.0 to 4.6 Run 4.6 Rec 4.5 C.L. 0.1 Time 1:30-1:43 Note: 100% return drill water, gray color	
	2		Concrete	98			
	4					Tape depth 4.6'	
670.5			Machine break 5.5'			Pull 2 From 4.6 to 9.6 Run 5.0 Rec 4.7 C.L. 0.3 Time 1:47-1:58	
	6		Machine break 6.9'	94			
	8						
665.5			Concrete panel-earth dike interface (0-1" deep) 9.6'-14.6'			Tape depth 9.3'	
	10		Machine break 10.2'			Pull 3 From 9.6 to 14.6 Run 5.0 Rec 4.5 C.L. 0.5 Time 2:04-2:15 Note: drill water color change from gray to brown at 12.0' depth	
	12		Machine break 11.3'	90	11.0'		
			Machine break 12.7'		Box 2		
			Machine break 13.0'	C-130			
			Machine break 13.5'				
661.1	14						
Continued on sheet #2							

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.1		Hole No. 39C	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 2 OF 2 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661.1	14b	c	d	e	f	g
660.5			Concrete panel-earth dike interface (0-1" deep) 9.6'-14.6'		Box 2 14.6'	Pull 3 (Continued) Tape depth 14.0'
			Bottom of hole 14.6'			Note: 6-14-84 water level after drilling 8.5'
						6-15-84 water level 24hrs. after drill- ing 11.5'

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 3 SHEETS	
1. PROJECT Clemson Upper Diversion Dam		South Atlantic		Hartwell Lake			
2. LOCATION (Coordinates or Station) STA. 12+20				10. SIZE AND TYPE OF BIT HQ Diamond			
3. DRILLING AGENCY Froehling and Robertson				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
4. HOLE NO. (As shown on drawing title and file number) 39D				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
5. NAME OF DRILLER Tommy Burnette				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED	UNDISTURBED
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				14. TOTAL NUMBER CORE BOXES 4			
7. THICKNESS OF OVERBURDEN				15. ELEVATION GROUND WATER 660.1 (24hrs.)			
8. DEPTH DRILLED INTO ROCK Concrete 34.3				16. DATE HOLE 7-2-84		STARTED	COMPLETED
9. TOTAL DEPTH OF HOLE 34.3				17. ELEVATION TOP OF HOLE 675.1			
				18. TOTAL CORE RECOVERY FOR BORING 100 %			
				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.1	0 b	c	d	e	f	g	
			Segregated aggregate zone 0.0'-1.0'		Box 1	Pull 1 From 0.0 to 4.3 Run 4.3 Rec 4.1 C.L. 0.2 Time 10:13-10:24 Note: 100% return drill water-gray color	
	2		Concrete	95			
			Machine break 2.6'				
670.8	4		Poorly cemented aggregate zone (0-3/8" deep) 4.1'-9.3'			Tape depth 4.2'	
			Machine break 4.9'				
	6		Machine break 5.9'	102		Pull 2 From 4.3 to 9.3 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:28-10:37	
	8		Machine break 7.6'				
665.3	10		Poorly cemented aggregate zone (0-1" deep) 9.3'-14.0'			Tape depth 9.3'	
			Machine break 10.7'		10.7	Pull 3 From 9.3 to 14.3 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:42-10:51	
	12			98	Box 2		
661.1	14						
Continued on sheet #2							

C-132

PROJECT		ELEVATION TOP OF HOLE		Hole No.		
Clemson Upper Diversion Dam		675.1		39D		
INSTALLATION		SHEET		2		
Hartwell Lake		OF 3 SHEETS				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		c	d	e	f	g
661.1	14.0					
660.8	14.0		Machine break 14.0'			Pull 3 (Continued)
	14.2		Machine break 14.2'			Tape depth 14.1'
			Poorly cemented aggregate zone (0-1/2" deep)			Pull 4
	14.0'-15.3'					From 14.3 to 19.3
	15.0'		Machine break 15.0'			Run 5.0
	16.4'		Machine break 16.4'	102		Rec 5.1
			Concrete (Continued)		Box 2	C.L. 0.0
						Time 10:59-11:08
	18.4'		Machine break 18.4'			
655.8	19.3'					Tape depth 19.3'
	20.3'					Pull 5
	24.3'					From 19.3 to 24.3
						Run 5.0
				102		Rec 5.1
						C.L. 0.0
						Time 11:14-11:22
	23.2'		Machine break 23.2'			
650.8	24.3'					Tape depth 24.3'
	25.1'		Machine break 25.1'			Pull 6
	26.3'		Machine break 26.3'	100		From 24.3 to 29.3
	28.0'		Machine break 28.0'		26.5'	Run 5.0
					Box 3	Rec 5.0
						C.L. 0.0
						Time 11:28-11:39
645.8	29.3'					Tape depth 29.3'
	30.5'		Machine break 30.5'	100		Pull 7
	31.7'		Machine break 31.7'		C-133	From 29.3 to 34.3
643.1	32.0'					Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 11:44-11:55
			Continued on sheet #3			

Continued on sheet #3

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 39D		
PROJECT		INSTALLATION		SHEET 3		
Clemson Upper Diversion Dam		Hartwell Lake		OF 3 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.1	32b	c	d	e	f	g
640.1	34		Concrete (Continued)		32.2	Pull 7 (Continued) Note: drill water color change from gray to light brown at depth 33.0'
			Machine break 32.7'			
			Concrete panel-earthen dike interface (0-3/8" deep) 33.1'-34.3'		Box 4	
			Machine break 33.9'		34.3	
			Bottom of hole 34.3'			Note: 7-2-84 water level after drilling at 14.8'
	36					7-3-84 water level 24hrs after drilling at 15.0'

DRILLING LCG		DIVISION South Atlantic	INSTALLATION Hartwell Lake		SHEET 1 OF 5 SHEETS
1. PROJECT Clemson Upper Diversion Dam			10. SIZE AND TYPE OF BIT HO Diamond		
2. LOCATION (Coordinates or Station) STA. 12+10			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL		
3. DRILLING AGENCY Froehling and Robertson			12. MANUFACTURER'S DESIGNATION OF DRILL CME 55		
4. HOLE NO. (As shown on drawing title and file number) 39E			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED
5. NAME OF DRILLER Tommy Burnette			14. TOTAL NUMBER CORE BOXES 8		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG FROM VERT.			15. ELEVATION GROUND WATER 671.5' (24hrs)		
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 7-10-84 COMPLETED 7-11-84		
8. DEPTH DRILLED INTO SOCK Concrete 82.3'			17. ELEVATION TOP OF HOLE 675.0'		
9. TOTAL DEPTH OF HOLE 83.7'			18. TOTAL CORE RECOVERY FOR BORING 98.3 %		
			19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
675.0	0 b	c	d	e	f	g
			Segregated aggregate zone 0.0-0.6' Concrete			Pull 1 From 0.0 to 3.8 Run 3.8 Rec 3.9 C.L. 0.0 Time 11:46-12:01 Note: 3 inch down stream offset from centerline of panel
	2		Machine break 1.7'	103	Box 1	Tape depth 3.9'
671.2	4		Poorly cemented aggre- gate zone (0-1" deep) 2.4'-11.8'			Pull 2 From 3.8 to 8.8 Run 5.0 Rec 4.8 C.L. 0.2 Time 12:37-12:46 Note: 100% return drill water-gray color
			Machine break 2.9'			Tape depth 8.7'
	6		Machine break 4.9'	96		Pull 3 From 8.8 to 13.8 Run 5.0 Rec 5.1 C.L. 0.0 Time 12:51-1:02
	8		Machine break 7.5'			
666.2	10		Machine break 8.6'	102	10.7'	
			Machine break 9.0'		Box 2	
	12					
661.2	14					Tape depth 13.8'
661.0						Pull 4

C-135

Continued on sheet #2

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. 39E

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 2

OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
661.0	14b	c	Concrete (Continued) Occasional aggregate voids (0-3/8" deep) 14.2'-15.4'			Pull 4 (Continued) From 13.8 to 18.8 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:07-1:20
	16		Machine break 14.7' Poorly cemented aggregate zone (0-3/8" deep) 15.6'-18.2'	102	Box 2	
			Machine break 16.6'			
			Machine break 17.2'			
	18		Machine break 17.9'			
656.2						Tape depth 18.9'
	20		Poorly cemented aggregate zone (0-1/2" deep) 19.7'-23.6'	98		Pull 5 From 18.8 to 23.8 Run 5.0 Rec 4.9 C.L. 0.1 Time 1:29-1:46
			Machine break 20.0'			
			Machine break 21.0'			
			Machine break 21.5'		21.5'	
	22				Box 3	
			Machine break 23.0'			
651.2						Tape depth 23.3'
	24		Machine break 24.4'			Pull 6 From 23.8 to 28.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:54-2:08
	26			100		
			Machine break 26.6'			
			Machine break 27.3'			
	28		Machine break 28.2'			
646.2						Tape depth 28.8'
						Pull 7 From 28.8 to 33.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:18-2:32
	30		Machine break 29.8'	100		
					C-136	
			Machine break 31.4'			
643.0	32					

Continued on sheet #3

ELEVATION TOP OF HOLE

675.0

Hole No. 39E

PROJECT

INSTALLATION

SHEET

2

-Clemson Upper Diversion Dam

Hartwell Lake

OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.0	32	c	d			
			Concrete (Continued)		32.5'	Pull 7 (Continued)
			Machine break 32.5'			
			Machine break 33.1'			
			Machine break 33.6'			
641.2	34				Box 4	Tape depth 33.8'
			Machine break 35.2'	100		Pull 8
			Machine break 35.6'			From 33.8 to 38.8
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 2:42-2:53
	36		Poorly cemented aggregate (0-3/8" deep)			
			36.3'-40.0'			
			Machine break 36.8'			
			Machine break 37.6'			
	38					
636.2			Machine break 38.6'			Tape depth 38.8'
						Pull 9
						From 38.8 to 43.8
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 8:26-8:43
	40			100		
	42		Poorly cemented aggregate zone (0-3/8" deep)			
			42.1'-43.1'			
					43.3'	
631.2						Tape depth 43.8'
	44				Box 5	Pull 10
			Machine break 45.2'			From 43.8 to 48.8
			Machine break 45.9'	102		Run 5.0
	46					Rec 5.1
			Machine break 46.8'			C.L. 0.0
						Time 8:49-9:01
	48		Machine break 48.1'			
			Machine break 48.6'			
626.2						Tape depth 48.9'
						Pull 11
						From 48.8 to 53.8
						Run 5.0
625.0	50					

Continued on sheet #4

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. 39E

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

4

OF 5

SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.0	50	c	d			
			Concrete (Continued)	100	Box 5	Pull 11 (Continued) Rec 5.0 C.L. 0.0 Time 9:09-9:22
	52					
			Machine break 52.9'			
621.2	54				53.8'	Tape depth 53.9'
				98	Box 6	Pull 12 From 53.8 to 58.8 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:29-9:43
	56					
	58					
616.2	60					Tape depth 58.3'
				104		Pull 13 From 58.8 to 63.8 Run 5.0 Rec 5.2 C.L. 0.0 Time 9:50-10:03
	62					
611.2	64					Tape depth 64.0'
					64.5'	Pull 14 From 63.8 to 68.8 Run 5.0 Rec 4.8 C.L. 0.2 Time 10:10-10:21
	66			96	Box 7	
			C-138			
607.0	68					

Continued on sheet #5

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.0

Hole No. 39E

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET

5

OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		c	d	e	f	g
607.0	68					Pull 14 (Continued) Tape depth 68.8'
606.2			Concrete (Continued)			
	70				Box 7	Pull 15 From 68.8 to 73.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:30-10:41
			Machine break 71.3'	100		
	72					
601.2						Tape depth 73.8'
	74					Pull 16 From 73.8 to 78.8 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:48-11:02
					75.5'	
	76			100	Box 8	
			Machine break 76.9'			
	78					
596.2			Concrete panel-earthen dike interface (0-1" deep) 78.8'-82.3'			Tape depth 78.3'
			Machine break 79.8'			Pull 17 From 78.8 to 83.8 Run 5.0 Rec 3.5 C.L. 1.5 Time 11:40-11:47 Note: changed from bottom discharge to face discharge bit at depth 78.8'
	80		Machine break 80.8'			
			Machine break 81.5'	70		
	82		Machine break 82.1'			
591.2					83.8'	Tape depth 82.7'
	84		Bottom of hole 83.7'			Note: 7-11-84 water level after drill not measurable due to standing water around hole 7-12-84 water level 24hrs after drill at 3.5' depth

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 6 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) Sta. 12+75				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson Inc.				12. MANUFACTURER'S DESIGNATION OF DRILL CME55			
4. HOLE NO. (As shown on drawing title and file number) 42				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 9			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER N/A		16. DATE HOLE STARTED 4-30-84 COMPLETED 5-1-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 674.2			
8. DEPTH DRILLED INTO Concrete 86.2				18. TOTAL CORE RECOVERY FOR BORING 94 %			
9. TOTAL DEPTH OF HOLE 92.2				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
674.2	0		Concrete				
			Machine break-0.4				
			Machine break-1.0	100	Box 1		Pull 1 From 0.0 to 2.2 Run 2.2 Rec 2.2 C.L. 0.0 Time 8:25-8:40 Tape depth 2.2'
672.0	2		Machine break-2.0				
	4			58			Pull 2 From 2.2 to 7.2 Run 5.0 Rec 2.9 C.L. 2.1 Time 8:57-9:16 Note: 100% return drill water, gray color. Changed drill bit at 2.2' depth Tape depth 5.0'
			Segregated aggregate zone 6.3'-7.7'				
667.0	6		Machine break-7.3'				
	8			173			Pull 3 From 7.2 to 10.2 Run 3.0 Rec 5.2 C.L. 0.0 Time 9:32-9:36 Note: Changed back to previous drill bit at 7.2' depth to increase recovery Tape depth 10.4'
664.0	10		Machine break-10.0		10.2		
662.0	12		Machine break-12.0	95	Box 2		Pull 4 From 10.2 to 12.2 Run 2.0 Rec 1.9 C.L. 0.1 Time 9:42-9:46 Tape depth 12.3'
				100			Pull 5 From 12.2 to 17.2 Run 5.0
660.2	14						

Continued sheet #2

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.2		Hole No. 42	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 2 OF 6 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
660.2	14	c	Concrete (Continued)		Box 2	Pull 5 (Continued) Rec 5.0 C.L. 0.0 Time 9:52-10:01
657.0	16					Tape depth 17.3'
	18			100		Pull 6 From 17.2 to 22.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:06-10:14
	20		Machine break-20.6		21.1'	
652.0	22				Box 3	Tape depth 22.3'
	24			100		Pull 7 From 22.2 to 27.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:20-10:30
647.0	26					Tape depth 27.5'
	28			100		Pull 8 From 27.2 to 32.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:35-10:45
	30		Machine break-30.9			
642.2	32		C-141		31.9'	
			Continued sheet #3			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 42		
PROJECT		INSTALLATION		SHEET 3		
Clemson Upper Diversion Dam		Hartwell Lake		OF 6 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
642.2	32	c	d	e	f	g
642.0			Concrete (Continued)			Pull 8 (Continued)
			Loosely cemented aggregate zone 32.9'-36.6' (0-1/4" deep)		Box 4	Tape depth 32.2'
	34			100		Pull 9
						From 32.2 to 37.2
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 10:51-11:02
	36					
637.0			Loosely cemented aggregate zone 37.2'-39.2' (0-1/2" deep)			Tape depth 37.2'
	38			102		Pull 10
						From 37.2 to 42.2
						Run 5.0
						Rec 5.1
						C.L. 0.0
						Time 11:09-11:20
	40					
632.0	42		Occasional aggregate voids (0-3/8" deep) 42.3'-43.3'		42.3'	Tape depth 42.3'
						Pull 11
						From 42.2 to 47.2
						Run 5.0
					Box 5	Rec 4.0
	44			98		C.L. 0.1
						Time 11:29-11:41
	46		Segregated aggregate zone 46.2'-48.0'			
627.0						Tape depth 47.2'
	48			100		Pull 12
						From 47.2 to 52.2
						Run 5.0
						Rec 5.0
						C.L. 0.0
						Time 12:37-12:51
624.2	50					
			</			

Continued sheet #4

PROJECT		ELEVATION TOP OF HOLE	Hole No.
Clemson Upper Diversion Dam		674.2	42
INSTALLATION		SHEET	
Hartwell Lake		4	
		OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d
624.2	50		Concrete (Continued)
			Pull 12 (Continued)
			Tape depth 52.2'
622.0	52		Pull 13
			From 52.2 to 57.2
			Run 5.0
			Rec 5.0
			C.L. 0.0
			Time 12:57-1:11
			Box 6
			53.3'
			100
			Tape depth 57.2'
617.0	58		Pull 14
			From 57.2 to 62.2
			Run 5.0
			Rec 5.0
			C.L. 0.0
			Time 1:16-1:32
			100
			Tape depth 62.2'
612.0	62		Pull 15
			From 62.2 to 67.2
			Run 5.0
			Rec 5.0
			C.L. 0.0
			Time 1:39-1:55
			100
			64.2'
			Box 7
			67.2'
607.0	68		Pull 16
606.2			

Continued sheet #5

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 674.2		Hole No. 42	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET 5 OF 6 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
606.2	68b	c	Concrete (Continued) Segregated aggregate zone 68.8'-70.8'	100	Box 7	Pull 16 (Continued) From 67.2 to 72.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:03-2:18
602.0	72			100		Tape depth 72.2'
	74			100		Pull 17 From 72.2 to 77.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:25-2:38
	76				75.2	
597.0	78				Box 8	Tape depth 77.2'
	80			100		Pull 18 From 77.2 to 82.2 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:18-8:32
592.0	82					Tape depth 82.2'
	84		Poorly cemented aggre- gate zone (0-3/8"deep) 82.8'-83.4' Concrete panel, earth interface (0-1"deep) 83.5'-86.2'	88		Pull 19 From 82.2 to 87.2 Run 5.0 Rec 4.4 C.L. 0.6 Time 8:41-8:56
	86		Machine break-85.5	C-144		Note: 100% return drill water, gray color brown color beginning depth 84.0'
588.2						

Continued sheet #6

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE		Hole No. 42	
PROJECT			INSTALLATION		SHEET 6 OF 6 SHEETS	
Clemson Upper Diversion Dam			Hartwell Lake			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
588.2	86b	c	d	e	86f.1	g
587.0			Bottom of concrete 86.2' sand-clay bentonite contact material 86.2'-86.6'		Box 9	Pull 19 (Continued)
	88			0		Pull 20 From 87.2 to 92.2 Run 5.0 Rec 0.0 C.L. 5.0 Time 9:01-9:11
582.0	92		Bottom of hole-92.2'	92.2'		Tape depth 89.8'
	94					Note: standing water around open hole end of drilling, water table depth not applicable

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 6 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HC Diamond			
2. LOCATION (Coordinates or Station) Sta 15+53				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson Inc.				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 53				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 9			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 634.8 (24hrs.)		16. DATE HOLE STARTED 4-25-84 COMPLETED 4-26-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 675.3			
8. DEPTH DRILLED INTO Concrete 90.3 ft.				18. TOTAL CORE RECOVERY FOR BORING 96 %			
9. TOTAL DEPTH OF HOLE 98.0 ft.				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.3	0	c	d	e	f	g	
	2		Concrete Loose aggregate-clay seam .5'-.7' Poorly cemented aggregate zone .7'-2.0' (0-1/2" deep)	93	Box 1	Pull 1 From 0.0 to 3.0 Run 3.0 Rec 2.8 C.L. 0.2 Time 11:02-11:10 Note: 100% return drill water-gray color-brown ? depth .5'-.7' Tape depth 2.9'	
672.3				100			
672.0	4		Occasional aggregate voids 3.3'-4.4'	100		Pull 2 From 3.0 to 3.3 Run 0.3 Rec 0.3 C.L. 0.0 Time 11:15-11:19 Note: Drill tool stopped; pull drill bit and barrel	
	6						
667.3	8		Machine break-7.9'			Pull 3 From 3.3 to 8.0 Run 4.7 Rec 4.7 C.L. 0.0 Time 11:29-11:40 Tape depth 8.0'	
	10			102			
	12				11.2		
662.3			Machine break-12.8'			Pull 4 From 8.0 to 13.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 12:28-12:38 Tape depth 13.0'	
	14				Box 2	Pull 5	
661.3							
Continued sheet #2							

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.3		Hole No. 53	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
664.3	14	c	Concrete (Continued)			
	16		Machine break-15.3	100	Box 2	Pull 5 (Continued) From 13.0 to 18.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:43-12:53
657.3	18					Tape depth 18.0'
	20		Occasional aggregate voids 19.5'-22.4'	100		Pull 6 From 18.0 to 23.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:58-1:08
	22				21.9'	
652.3			Machine break-22.8			Tape depth 23.0'
	24			100	Box 3	Pull 7 From 23.0 to 28.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:14-1:25
	26					
647.3	28					Tape depth 28.0'
	30		Machine break-30.5	100		Pull 8 From 28.0 to 33.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:35-1:47
643.3	32					
			Continued sheet #3			

C-147

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.3		Hole No. 53	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 6 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.3	32	c	Concrete (Continued)		32.6'	Pull 8 (Continued)
642.3	34					Tape depth 33.0'
	36			100	Box 4	Pull 9 From 33.0 to 38.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:51-2:06
637.3	38					Tape depth 38.0'
	40			100		Pull 10 From 38.0 to 43.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:11-2:26
632.3	42		C-148			Tape depth 43.0'
	44			96	Box 5	Pull 11 From 43.0 to 48.0 Run 5.0 Rec 4.8 C.L. 0.2 Time 2:33-2:47
	46					Tape depth 47.9'
627.3	48			104		Pull 12 From 48.0 to 53.0 Run 5.0 Rec 5.2 C.L. 0.0
625.3	50					
			Continued sheet #4			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.3		Hole No. 53	
PROJECT Clemson Upper Division Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
625.3	50	c	Poorly cemented aggregate zone (0-1/2" deep) 50.1'-50.5'		Box 5	Pull 12 (Continued) Time 2:54-3:08
	52		Concrete (Continued)			
622.3					53.0'	Tape depth 53.0'
	54			100	Box 6	Pull 13 From 53.0 to 58.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:25-8:44
	56					
617.3	58					Tape depth 58.0'
	60			100		Pull 14 From 58.0 to 63.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:53-9:10
	62					
612.3						Tape depth 63.0'
	64				64.0'	Pull 15 From 63.0 to 68.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:18-9:37
	66			100	Box 7	
607.3	68					Tape depth 68.0'

C-149

Continued sheet #5

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 53		
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 5 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
607.3	68	c	d			
			Concrete (Continued)		Box 7	Pull 16 From 68.0 to 73.0 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:46-10:06
	70			98		
	72					
602.3						Tape depth 72.9'
	74					Pull 17 From 73.0 to 78.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 10:34-10:45
	76			102	75.0'	Note: Changed drill bits at depth 73.0'
	78				Box 8	
597.3						Tape depth 78.0'
	80		Machine break-80.1	100		Pull 18 From 78.0 to 83.0 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:56-11:08
	82					
592.3						Tape depth 83.0'
	84			96		Pull 19 From 83.0 to 88.0 Run 5.0 Rec 4.8 C.L. 0.2 Time 11:16-11:31
			C-150			
589.3	86				85.9'	
			Continued sheet #6			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 53		
PROJECT		INSTALLATION		SHEET 6		
Clemson Upper Diversion Dam		Hartwell Lake		OF 6 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
589.3	86b	c	d	e	f	g
			Concrete (Continued)			Pull 19 (Continued)
					Box 9	
587.3	88					Tape depth 87.9
				78		Pull 20 From 88.0 to 93.0 Run 5.0 Rec 3.9 C.L. 1.1 Time 11:41-11:59
	90		30° Machine break 89.8' -90.0' 45° Sloping bottom of concrete 90.0'-90.3'			Note: Drill water 100% return gray color, then brown color at depth 91.0' fine sand in water
			Brown-gray-white fine to medium grained micaceous silty <u>sand</u>			Tape depth 92.5'
582.3	92		-grades coarser grained sand, weathered rock fragments			Pull 21 From 93.0 to 98.0 Run 5.0 Rec 2.4 C.L. 2.6 Time 1:57-2:11
			Gray-white coarse- medium-fine grained <u>sand</u> , with stratified brown clay layers	48		
	94					
	96					
577.3	98		Bottom of hole-98.0'		98.0'	Tape depth 98.0'
						Note: 4-26-84 water level after drilling 39.0 ft. 4-27-84 water level at 24 hrs., 40.5'

C-151

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 5 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) Sta. 16+63				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson, Inc.				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 57				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED N/A	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES		8	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		628.6 (24 hours)	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 4-18-84	
8. DEPTH DRILLED INTO Concrete 73.6				17. ELEVATION TOP OF HOLE		675.9	
9. TOTAL DEPTH OF HOLE 83.4				18. TOTAL CORE RECOVERY FOR BORING		96 %	
				19. SIGNATURE OF INSPECTOR		Nancy Rector (Engineer)	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.9	0	c	Concrete				
	2		Machine break-1.8'	100	Box 1		Pull 1 From 0.0 to 3.4 Run 3.4 Rec 3.4 C.L. 0.0 Time 1:46-2:08
672.5	4		Machine break-3.0'				Note: 100% drill water return-gray color
	6		Machine break-4.5'				Pull 2 From 3.4 to 8.4 Run 5.0 Rec 5.0 C.L. 0.0
	8		Machine break-5.4'	100			Time 2:16-2:29
667.5	10						Pull 3 From 8.4 to 13.4 Run 5.0 Rec 5.0 C.L. 0.0
	12			100	10.6		Time 2:30-2:46
662.5					Box 2		
661.9	14						Tape depth- 13.5'
							Pull 4

Continued Sheet #2

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
PROJECT		INSTALLATION		SHEET		
Clemson Upper Diversion Dam		Hartwell Lake		2 OF 5 SHEETS		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
661.9	14	c	d	e	f	g
657.5	16		Concrete (Continued)	100	Box 2	Pull 4 (Continued) From 13.4 to 18.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:56-3:10
	18		Machine break-17.0'			
	20		Machine break-19.7'	100		Tape depth 18.5 Pull 5 From 18.4 to 23.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:17-3:34
	22		Honeycomb pocket (1/2" deep) 21.9'-22.0'		21.6'	
652.5	24					Tape depth 23.4
	26			98	Box 3	Pull 6 From 23.4 to 28.4 Run 5.0 Rec 4.0 C.L. 0.1 Time 8:12-8:38
	28					
	30			100		Tape depth 28.4' Pull 7 From 28.4 to 33.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:43-9:02
643.9	32					

C-153

Continued Sheet #3

C-153

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.9		Hole No. 57	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 5 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
643.9	32 b	c	d	e	32.2 f	g
643.7			Concrete (Continued)			Pull 7 (Continued)
642.5	34		Machine break-35.1'	102	Box 4	Tape depth 33.4' Pull 8 From 33.4 to 38.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:08-9:24
637.5	38		Machine break-38.0'			Tape depth 38.4' Pull 9 From 38.4 to 43.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:33-9:52
632.5	42			98		
	44				43.1'	Tape depth 43.4' Pull 10 From 43.4' to 48.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:58-10:13
	46		Machine break-45.9'	102	Box 5	
627.5	48					Tape depth 48.4' Pull 11 From 48.4 to 53.4 Run 5.0 Rec 5.0
625.9	50					
Continued sheet #4						

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE		Hole No.	
PROJECT			INSTALLATION		SHEET	
Clemson Upper Diversion Dam			Hartwell Lake		4	
OF 5 SHEETS						
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
625.9	50	c	d	e	f	g
			Concrete (Continued)	100	Box 5	Pull 11 (Continued) C.L. 0.0 Time 10:20-10:35
622.5	52					
	54				53.8'	Tape depth 53.4' Pull 12 From 53.4 to 58.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:07-12:23
	56			100	Box 6	
617.5	58					
	60			100		Tape depth 58.4' Pull 13 From 58.4 to 63.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 12:30-12:49
	62		Machine break-62.2'			
612.5	64					Tape depth 63.4' Pull 14 From 63.4 to 68.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 12:56-1:10
	66			98	Box 7	
607.9	68					
Continued sheet #5						

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.9

Hole No. 57

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 5

OF 5 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607 _a .9	68 _b	c	d	e	f	g
607.5			Concrete (Continued)			Pull 14 (Continued) Tape depth 68.3'
	70			102	Box 7	Pull 15 From 68.4 to 73.0 Run 5.0 Rec 5.1 C.L. 0.0 Time 1:30-1:42
	72		Machine break-72.1'			
602.5			Concrete panel-earth interface (0 -2"deep) 73.6'-83.4'			Tape depth 73.4'
	74			90	75.7'	Pull 16 From 73.4 to 78.4 Run 5.0 Rec 4.5 C.L. 0.5 Time 1:50-2:02 Note: 100% return drill water-brown color. Drill out of panel at 73.6'
	76					
597.5	78				Box 8	Tape depth 78.2'
	80			38		Pull 17 From 78.4 to 83.4 Run 5.0 Rec 1.9 C.L. 3.1 Time 2:17-2:30 Note: 100% return drill water-brown color
	82					
592.5						Tape depth 82.8'
	84		Bottom of hole-83.4'			Note: 4-23-84 water level at 24 hours 47.3'
				C-156		

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1	
		South Atlantic		Hartwell Lake		OF 6 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HO Diamond			
2. LOCATION (Coordinates or Station) STA. 16+64				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 57-A				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED N/A	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES		9	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER		637.4 (24 hrs.)	
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED 4/23/84	
8. DEPTH DRILLED INTO Concrete 90.8'				17. ELEVATION TOP OF HOLE		675.9	
9. TOTAL DEPTH OF HOLE 98.4				18. TOTAL CORE RECOVERY FOR BORING		94%	
				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.9	0						
	2		Machine break-0.4' Machine break-0.6' Concrete	12	Box 1	Pull 1 From 0.0 to 3.4 Run 3.4 Rec 0.4 C.L. 3.0 Time 11:05-11:30	
672.5	4		Machine break-2.6' Machine break-3.4'			Note: Chisel 0.2 into conc.-100% return drill water, gray color Tape depth 0.8'	
	6		Machine break-4.9' Machine break-5.7'	196		Pull 2 From 3.4 to 6.2 Run 2.8 Rec 5.5 C.L. 0.0 Time 11:51-12:00 Tape depth 6.1'	
669.7	8		Machine break-7.3' Machine break-7.7'	91		Pull 3 From 6.2 to 8.4 Run 2.2 Rec 2.0 C.L. 0.2 Time 1:15-1:22 Tape depth 8.2'	
667.5	10					Pull 4 From 8.4 to 13.4 Run 5.0 Rec 5.2 C.L. 0.0 Time 1:40-1:50	
	12			104	Box 2	Note: Change drill bit to reduce machine breaks Tape depth 13.4	
662.5						Pull 5	
661.9	14						

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.9		Hole No. 57-A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
661.9	14	c	Concrete (Continued)			Pull 5 (Continued) From 13.4 to 18.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:54-2:06
	16			100	Box 2	
657.5	18					Tape depth 18.4'
	20			100		Pull 6 From 18.4 to 23.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:10-2:20
	22		Machine break-22.1		22.1'	
652.5	24					Tape depth 23.4'
	26		Machine break-26.4	100	Box 3	Pull 7 From 23.4 to 28.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:25-2:34
647.5	28					Tape depth 28.4'
	30			98		Pull 8 From 28.4 to 33.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:40-2:52
643.9	32					

C-158

Continued Sheet #3

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.9		Hole No. 57-A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 3 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVER- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.9	32 b	c	Concrete (Continued)		Box 3 33.0'	Pull 8 (Continued)
642.5	34				Box 4	Tape depth 33.3'
	36			100		Pull 9 From 33.4' to 38.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:56-3:10
637.5	38					Tape depth 38.3'
	40			102		Pull 10 From 38.4 to 43.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 3:21-3:32
	42		Machine break 41.7			
632.5	44				43.4'	Tape depth 43.4'
	46			100	Box 5	Pull 11 From 43.4 to 48.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:00-9:15
627.5	48					Tape depth 48.4
				C-159		Pull 12
625.9	50		Continued sheet #4			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.9		Hole No. 57-A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake			SHEET OF 6 SHEETS
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
625.9	50	c	d	e	f	g
622.5	52		Concrete (Continued)	98	Box 5	Pull 12 (Continued) From 48.4 to 53.4 Run 5.0 Rec 4.9 C.L. 0.1 Time 9:21-9:34
	54				54.5'	Tape depth 53.3' Pull 13 From 53.4 to 58.4 Run 5.0 Rec 5.1 C.L. 0.0 Time 9:40-9:54
617.5	56		Machine break-56.3		Box 6	
	58					Tape depth 58.4 Pull 14 From 58.4 to 63.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:01-10:13
612.5	60			100		
	62		Machine break-62.1			Tape depth 63.4' Pull 15 From 63.4 to 68.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:19-10:32
607.9	64				65.4'	
	66			100	Box 7	
	68		Continued sheet #5			

C-160

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No.		
		675.9		57-A		
PROJECT			INSTALLATION		SHEET	
Clemson Upper Diversion Dam			Hartwell Lake		5 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607.9	68.6	c	d			
607.5			Concrete (Continued)			Pull 15 (Continued) Tape depth 68.4'
	70			100	Box 7	Pull 16 From 68.4 to 73.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:41-10:54
	72					
602.5						Tape depth 73.4'
	74			100		Pull 17 From 73.4 to 78.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:02-11:16
	76				76.4'	
	78		Machine break-77.9		Box 8	Tape depth 78.4'
597.5				100		Pull 18 From 78.4 to 83.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:24-11:40
	80					
	82					
592.5						Tape depth 83.4'
	84		C-161	100		Pull 19 From 83.4 to 88.4 Run 5.0 Rec 5.0 C.L. 0.0 Time 11:48-12:00
			Honeycomb (1" deep) 85.1'			
			Poorly cemented aggregate zone 85.6' -			
589.9	86		87.9' (0-1/2")			
			Continued sheet #6			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.9		Hole No. 57-A	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 6 OF 6 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
589.9	86.6		Concrete (Continued)		Box 8	Pull 19 (Continued)
			Machine break-87.1		87.1'	
587.5	88		Poorly cemented aggregate zone 85.6'-87.9' (0-1/2")			Tape depth 88.4'
			Poorly cemented aggregate zone 89.0'-90.8' (0-1/2")	100	Box 9	Pull 20 From 88.4 to 90.1 Run 1.7 Rec 1.7 C.L. 0.0 Time 12:10-12:15
585.8	90		Bottom of concrete 90.8' Clay-Bentonite contact seam 90.8'-91.4'	70		Tape depth 90.1'
	92		Loose aggregate, clay and sand 91.4'-92.4'			Pull 21 From 90.1 to 93.4 Run 3.3 Rec 2.3 C.L. 1.0 Time 8:52-8:57
582.5	94					Note: 100% return drill water-brown color, sandy, Tape depth 93.4'
	96			0		Pull 22 From 93.4 to 98.4 Run 5.0 Rec 0.0 C.L. 5.0 Time 9:13-9:24
	98					Note: 100% return of drill water, brown color, sandy
577.5			Bottom of hole 98.4'		98.4'	Tape depth 97.9'
						Note: 4-25-84 water level after drilling 35.5' 4-26-84 water level at 24hrs. 38.5'

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Hartwell Lake		SHEET 1 OF 6 SHEETS	
1. PROJECT Clemson Upper Diversion Dam				10. SIZE AND TYPE OF BIT HQ Diamond			
2. LOCATION (Coordinates or Station) Sta. 17+37.5				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL			
3. DRILLING AGENCY Froehling and Robertson Inc.				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) 60				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER Tommy Burnette				14. TOTAL NUMBER CORE BOXES 9			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER 641.2 (24 hrs.)		16. DATE HOLE STARTED 4-17-84 COMPLETED 4-18-84	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE 675.7			
8. DEPTH DRILLED INTO SOIL Concrete 91.5'				18. TOTAL CORE RECOVERY FOR BORING 93 %			
9. TOTAL DEPTH OF HOLE 98.1'				19. SIGNATURE OF INSPECTOR Nancy Rector (Engineer)			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
675.7	0	b	c	d	e	f	g
	2		Concrete	97		Pull 1 From 0.0 to 3.1 Run 3.1 Rec 3.0 C.L. 0.1 Time 9:55-10:20	
672.6	4			100	Box 1	Pull 2 From 3.1 to 8.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:26-10:36	
667.6	8		Poorly cemented, loose aggregate zone 7.3'-7.6'			Pull 3 From 8.1 to 13.1 Run 5.0 Rec 4.0 C.L. 0.1 Time 10:40-10:50	
	10		Clay-Bentonite seam 8.7'-8.8'	98	10.3		
	12		Clay-Bentonite seam 9.8'-9.9'		Box 2		
			Segregated Zone 9.9'-10.3'				
662.6						Pull 4	
661.7	14		Continued on Sheet #2				

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.7		Hole No. 60	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 2 OF 6 SHEETS	
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV- ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
657.6	14		Concrete (Continued)	98	Box 2	Pull 4 (Continued) From 13.1 to 18.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 10:53-11:01
	16					
	18		Clay-Bentonite seam 18.7'-18.8'	100		Pull 5 From 18.1 to 23.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:05-1:20
	20				20.3'	
	22		Segregated zone 21.3'-22.1'			Note: Down time for 5 min. during drilling to seal pump leak.
652.6	24				Box 3	Pull 6 From 23.1 to 28.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:26-1:38
	26			100		
647.6	28					Pull 7 From 28.1 to 33.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 1:43-1:54
	30			100		
	32		Continued Sheet #3		Box 4	

C-164

30.9'

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 675.7		Hole No. 60		
PROJECT Clemson Upper Diversion Dam		INSTALLATION Hartwell Lake		SHEET 3 OF 6 SHEETS		
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
643.7	32		Concrete (Continued)			Pull 7 (Continued)
642.6	34			100	Box 4	Pull 8 From 33.1 to 38.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:00-2:10
637.6	38			100		Pull 9 From 38.1 to 43.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:16-2:23
632.6	42		Clay-Bentonite seam 42.0'-42.2'		41.3	
	44			98	Box 5	Pull 10 From 43.1-48.1 Run 5.0 Rec 4.9 C.L. 0.1 Time 2:33-2:43
627.6	48			100		Pull 11 From 48.1 to 53.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 2:46-3:00
625.7	50		Continued Sheet #4			

DRILLING LOG (Cont Sheet)			ELEVATION TOP OF HOLE 675.7		Hole No. 60	
PROJECT Clemson Upper Diversion Dam			INSTALLATION Hartwell Lake		SHEET 4 OF 6 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
625.7	50		Concrete (Continued)		Box 5	Pull 11 (Continued)
	52					
622.6					52.4"	
	54					Pull 12 From 53.1 to 58.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:08-3:13
	56			100	Box 6	
617.6	58					
	60					Pull 13 From 58.1 to 63.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:25-3:37
	62			100		
612.6					63.1"	
	64					Pull 14 From 63.1 to 68.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 3:47-4:01
	66			100	Box 7	
607.7	68					

C-166

Continued Sheet #5

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE
675.7

Hole No. 60

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 5

OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV. ERY	BOX OR SAMPLE NO	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
607.7	68	c	d	e	f	8
607.6			Concrete (Continued)			Pull 14 (Continued)
	70			100	Box 7	Pull 15 From 68.1 to 73.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 8:40-8:57
602.6	74			100	74.1	Pull 16 From 73.1 to 78.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:03-9:22
597.6	78			100	Box 8	Pull 17 From 78.1 to 83.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 9:30-9:49
592.6	84					Pull 18 From 83.1 to 88.1 Run 5.0 Rec 5.0 C.L. 0.0 Time 10:02-10:20
589.7	86				85.0	
					Box 9	
			Continued Sheet #6			

C-167

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

675.7

Hole No. 60

PROJECT

Clemson Upper Diversion Dam

INSTALLATION

Hartwell Lake

SHEET 6

OF 6 SHEETS

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOV- ERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
589.7	86	c	d	e	f	g
			Concrete (Continued)			Pull 18 (Continued)
587.6	88				Box 9	Pull 19 From 88.1 to 91.5 Run 3.4 Rec 3.4 C.L. 0.0 Time 10:32-10:46
				100		Note: Tool dropped 0.1' at 91.5'
584.2			Bottom of concrete 91.5'			Pull 20 From 91.5 to 93.1 Run 1.6 Rec 0 C.L. 1.6 Time 11:00-11:05
	90					
	92			0		
582.6						Note: Drill water- 100% return, brown color, fine sand in water
	94			0		
	96					Pull 21 From 93.1 to 98.1 Run 5.0 Rec 0 C.L. 5.0 Time 11:10-11:25
577.6	98				98.1'	Note: Drill water- 100% return, brown color, fine sand in water
			Bottom of Hole: 98.1'			Note: 4-18-84 water level after drilling 80.4'
						4-19-84 water level at 24 hours 24.5'

C-168

REHABILITATION OF CLEMSON UPPER DIVERSION DAM

CONSTRUCTION FOUNDATION REPORT

APPENDIX D

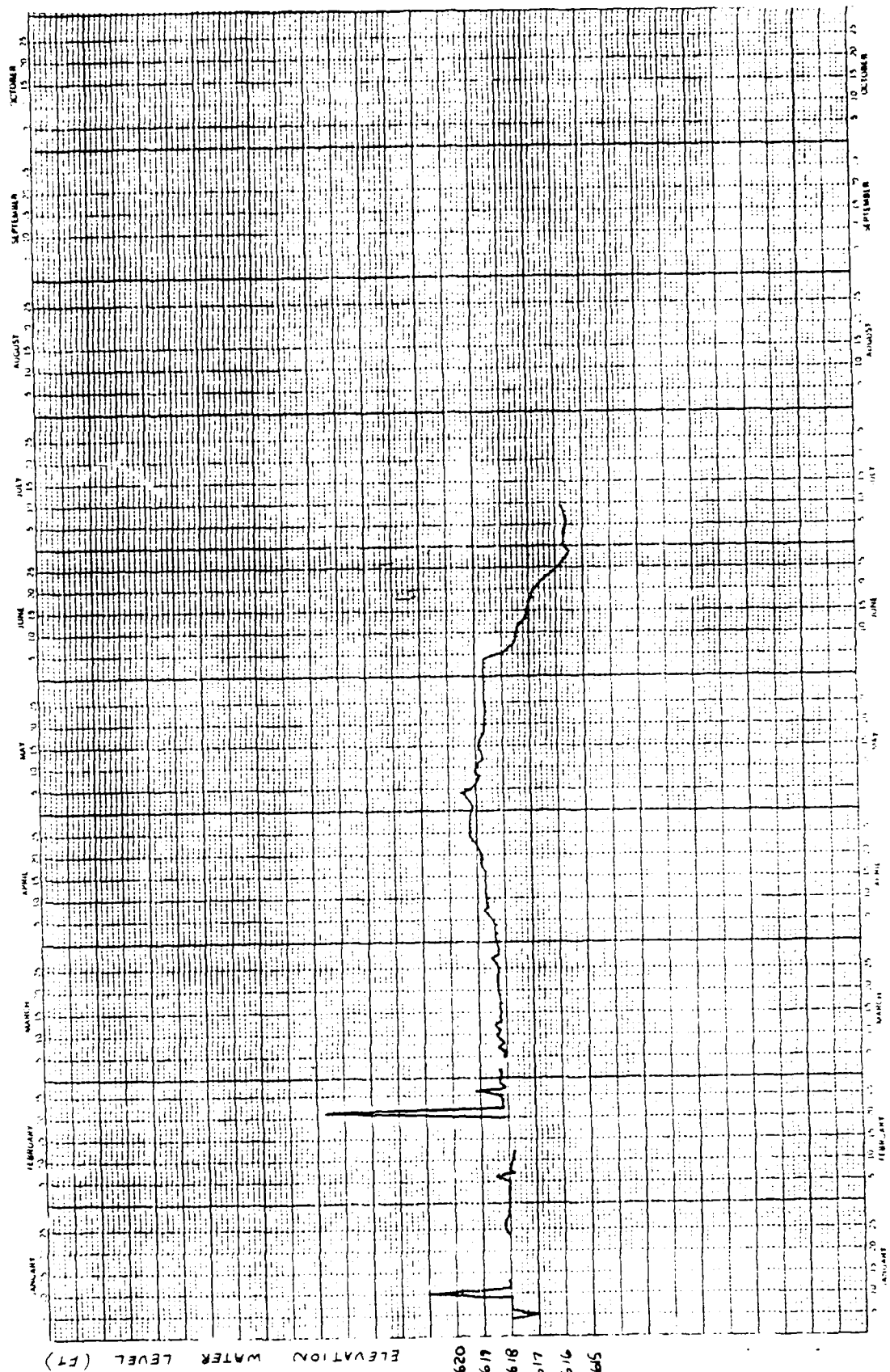
Piezometer Plots

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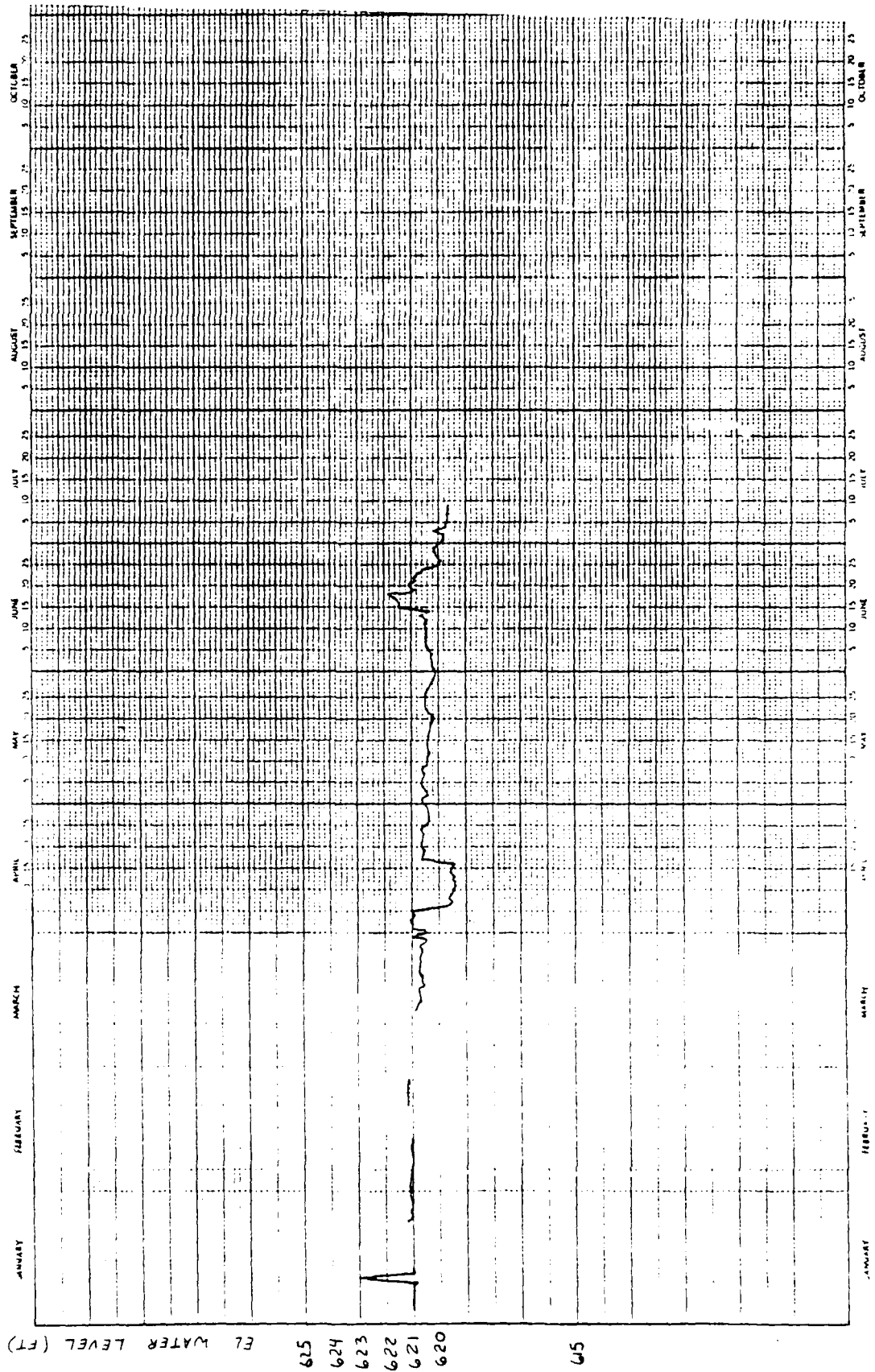
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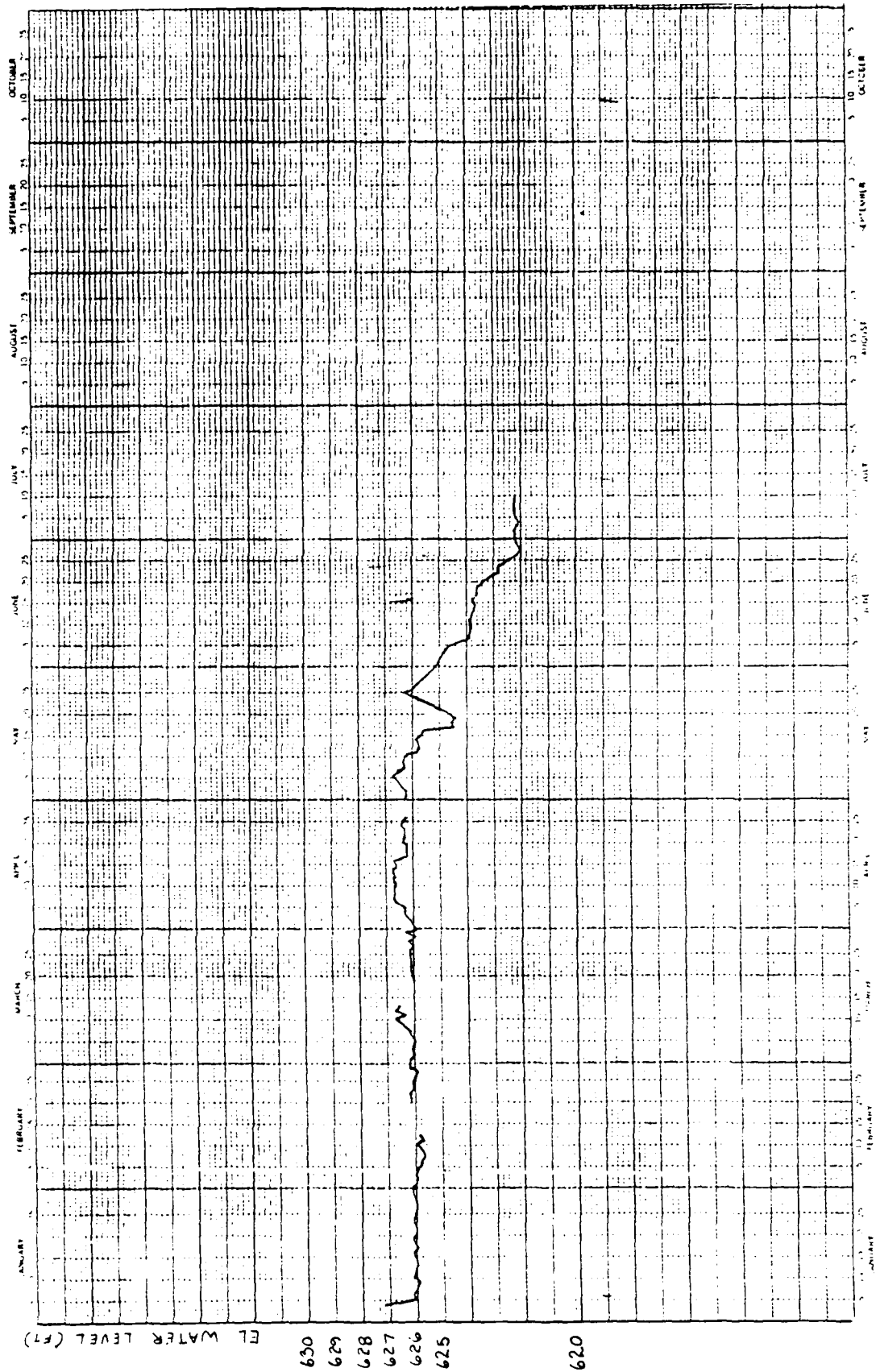


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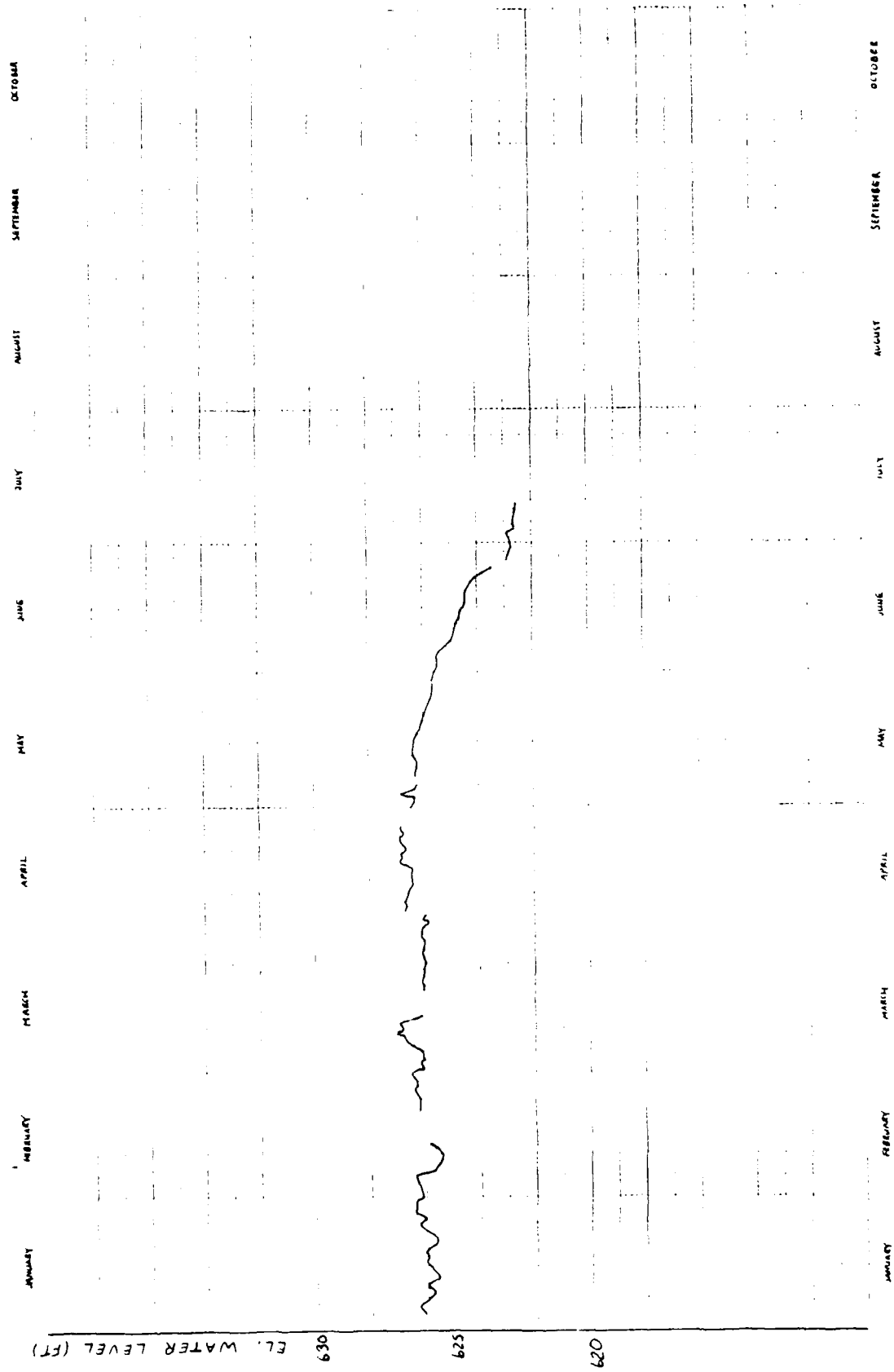
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47 2812

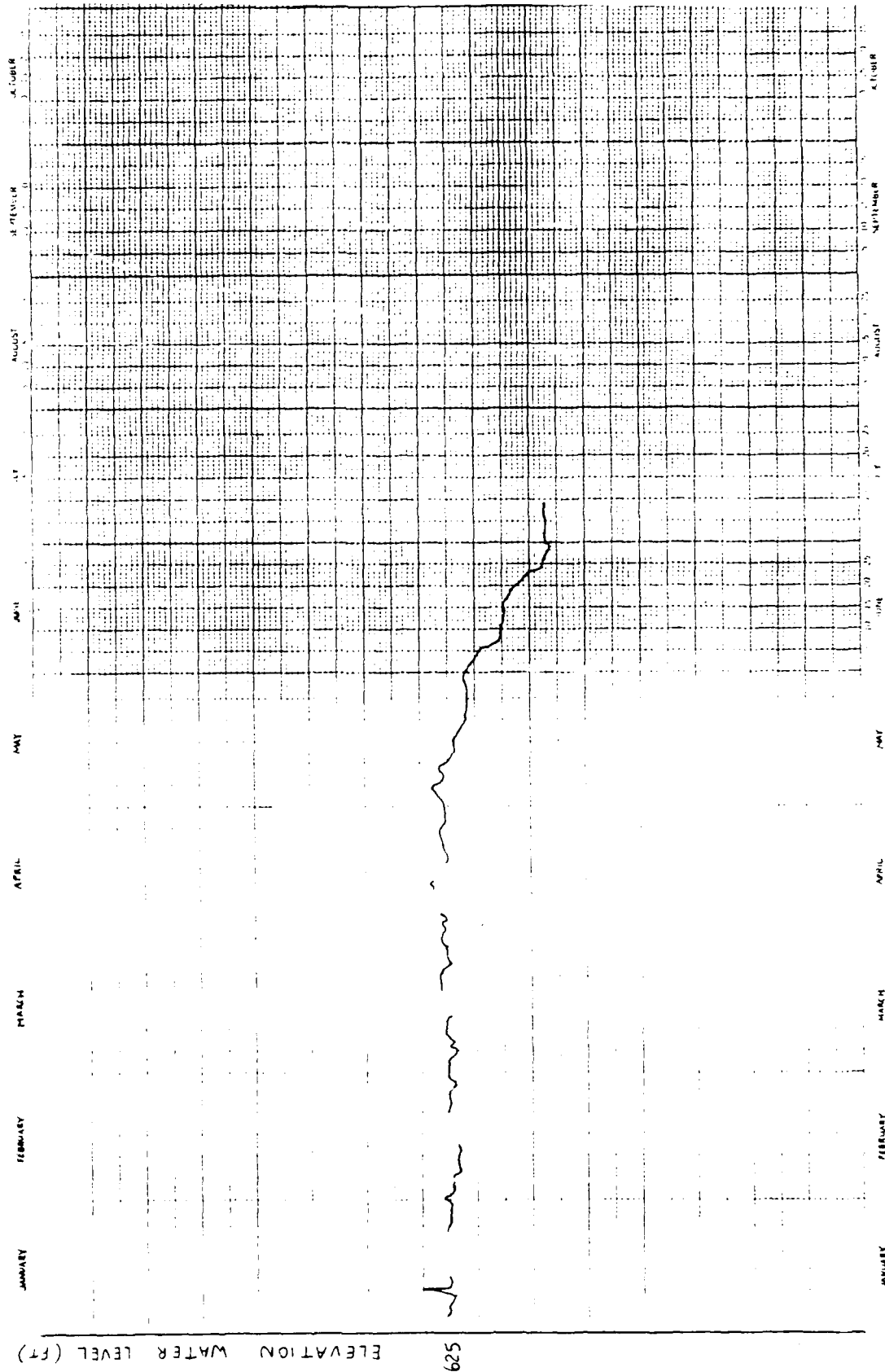
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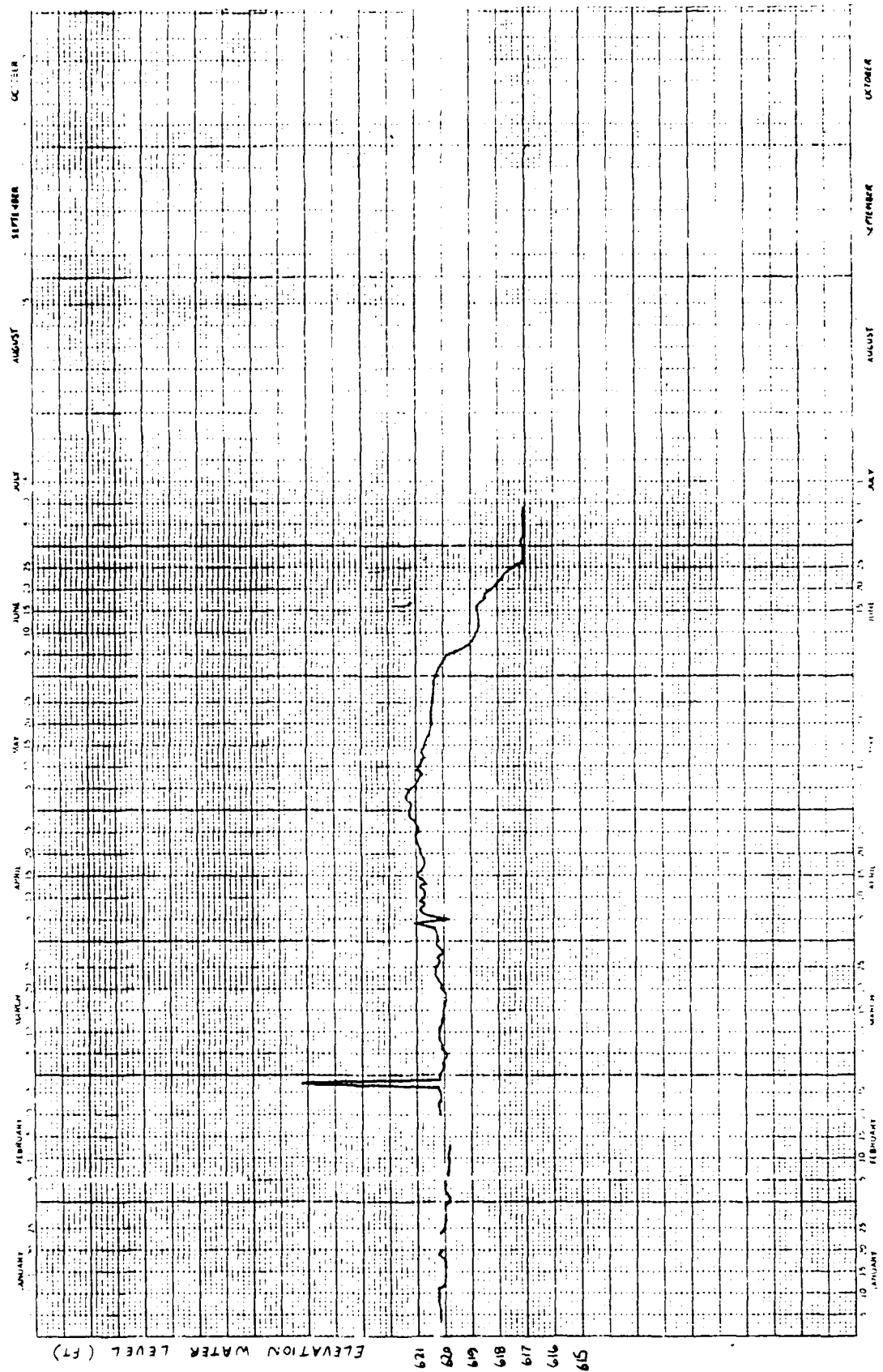
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PC 203

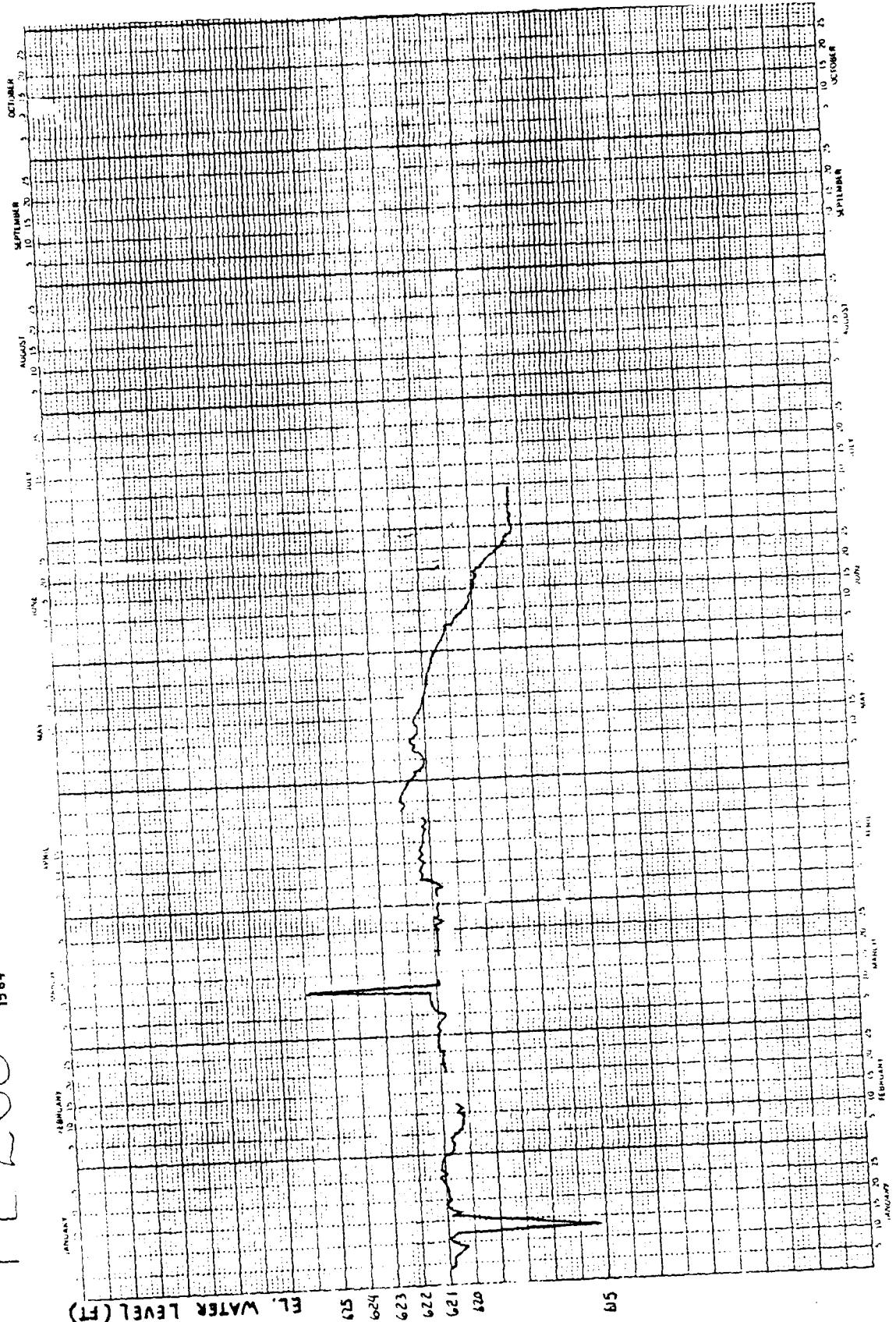
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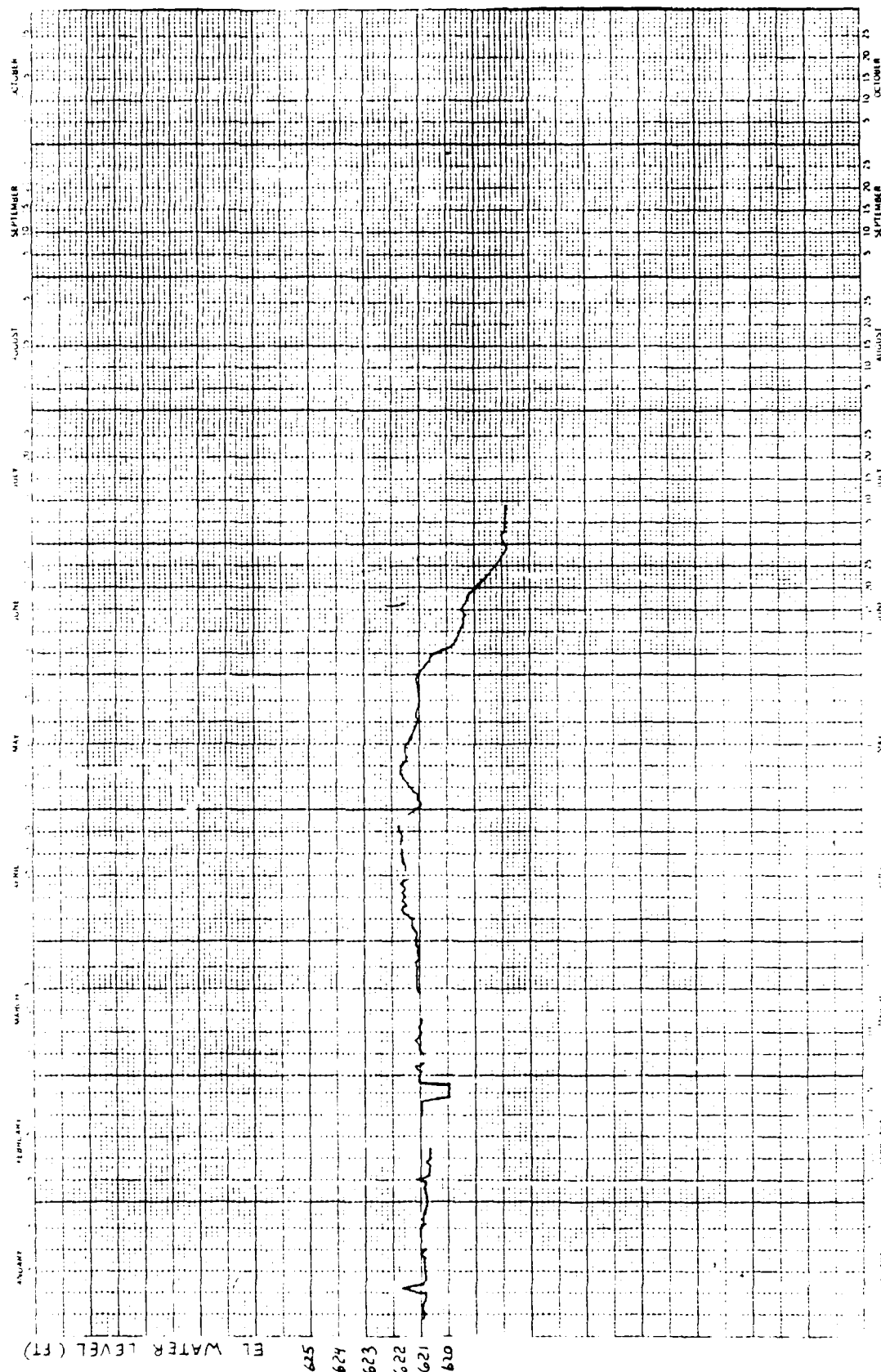
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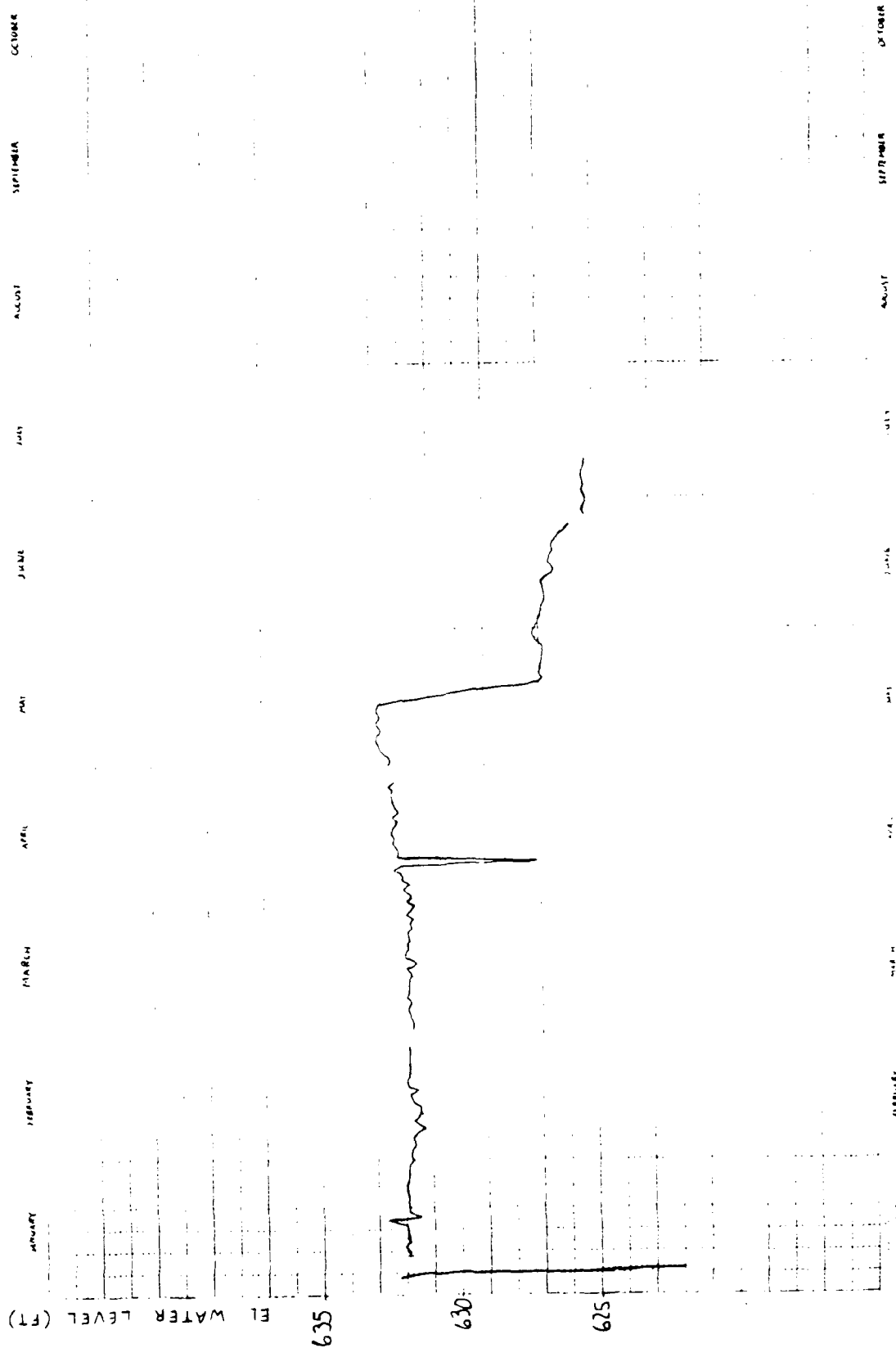
EL. WATER LEVEL (FT)



PF 203
1964

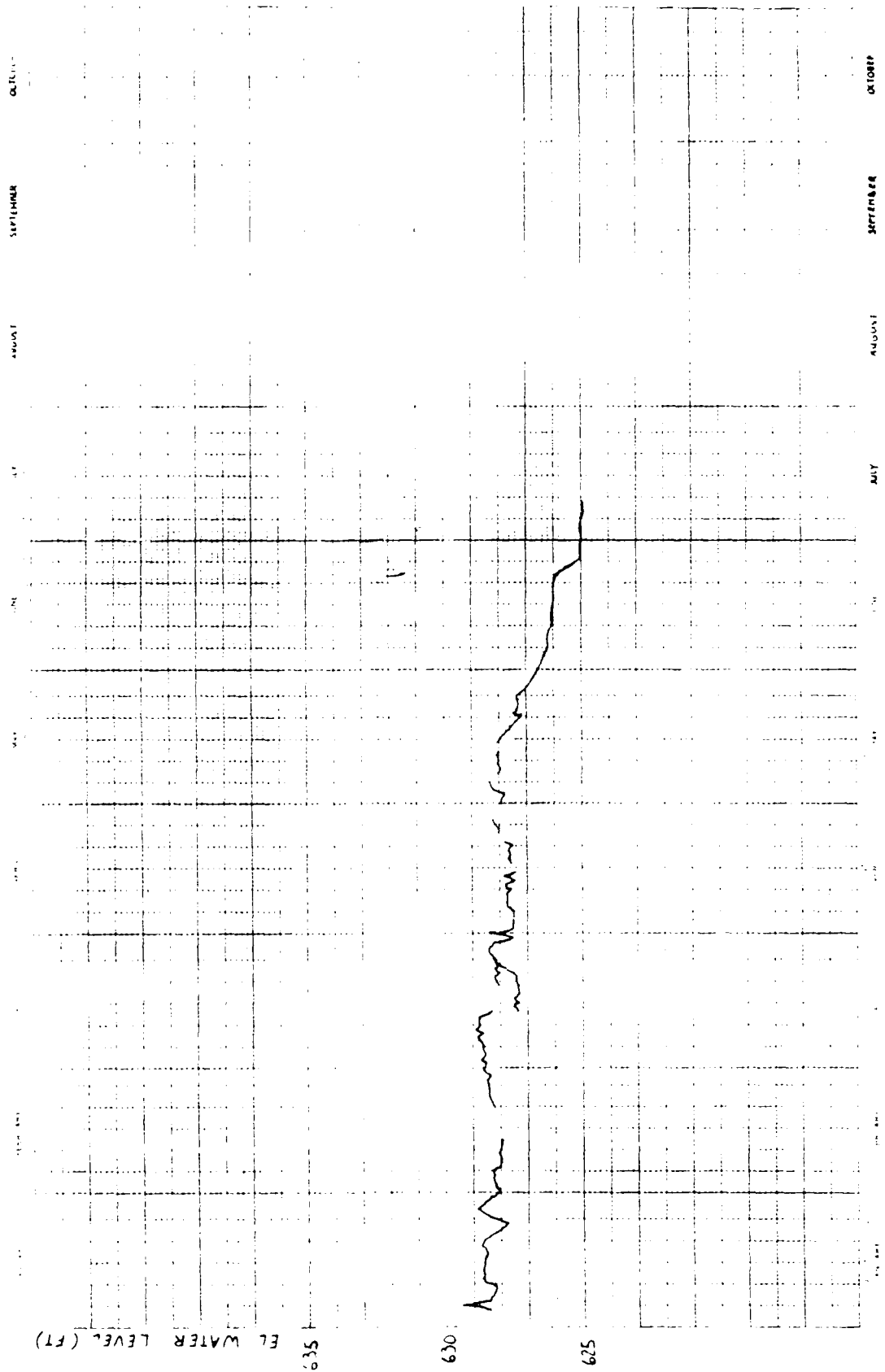


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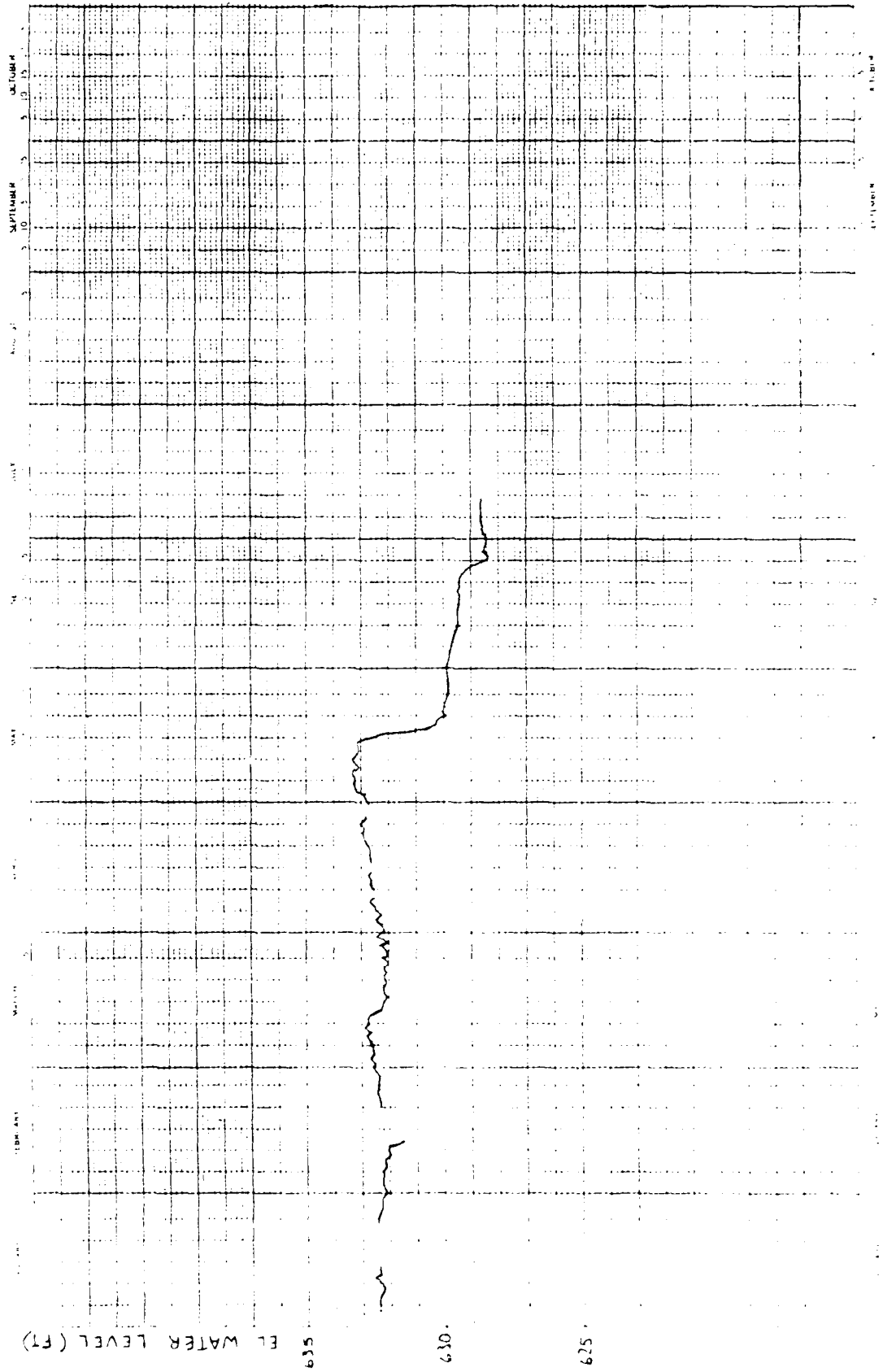
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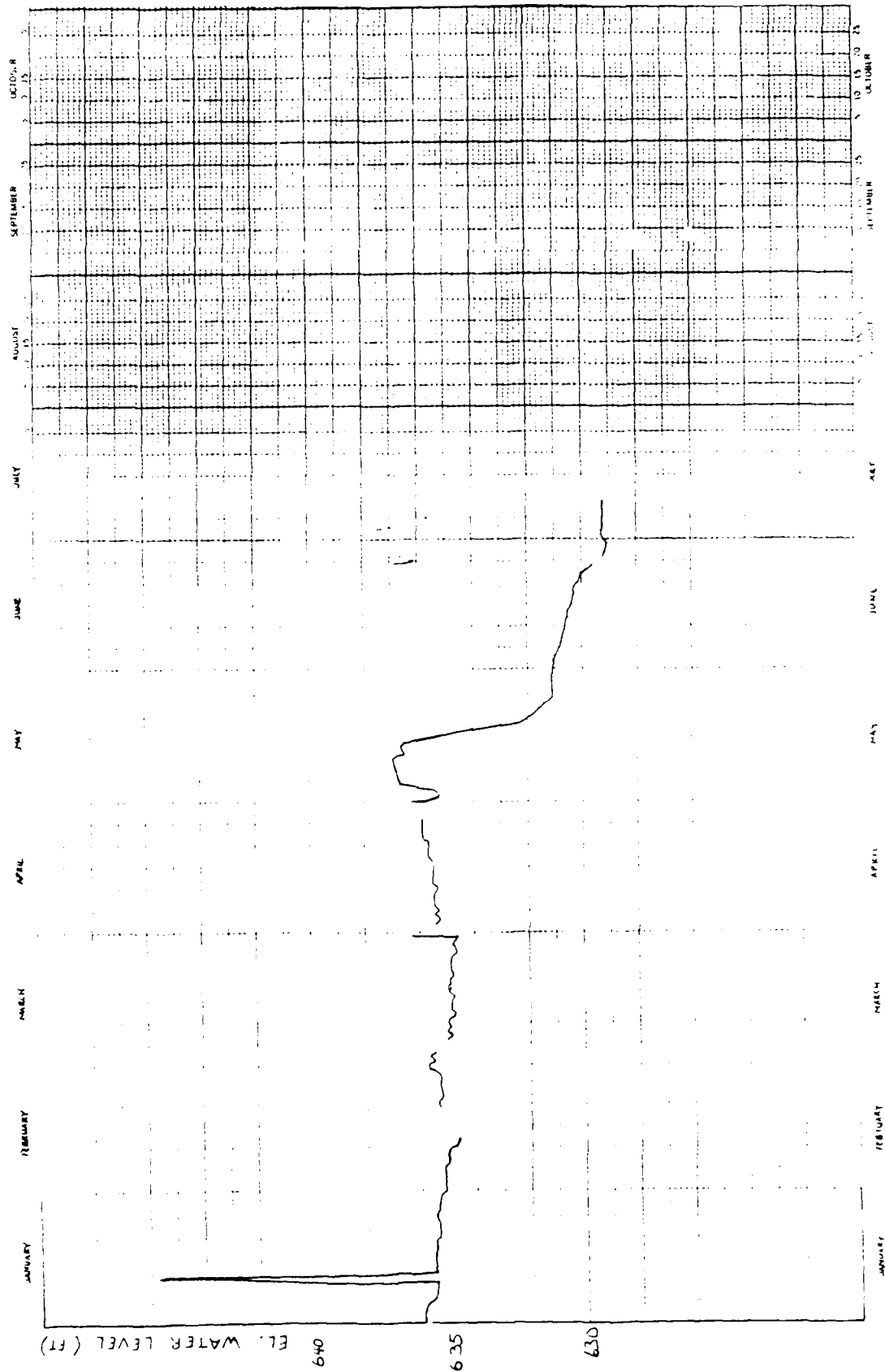
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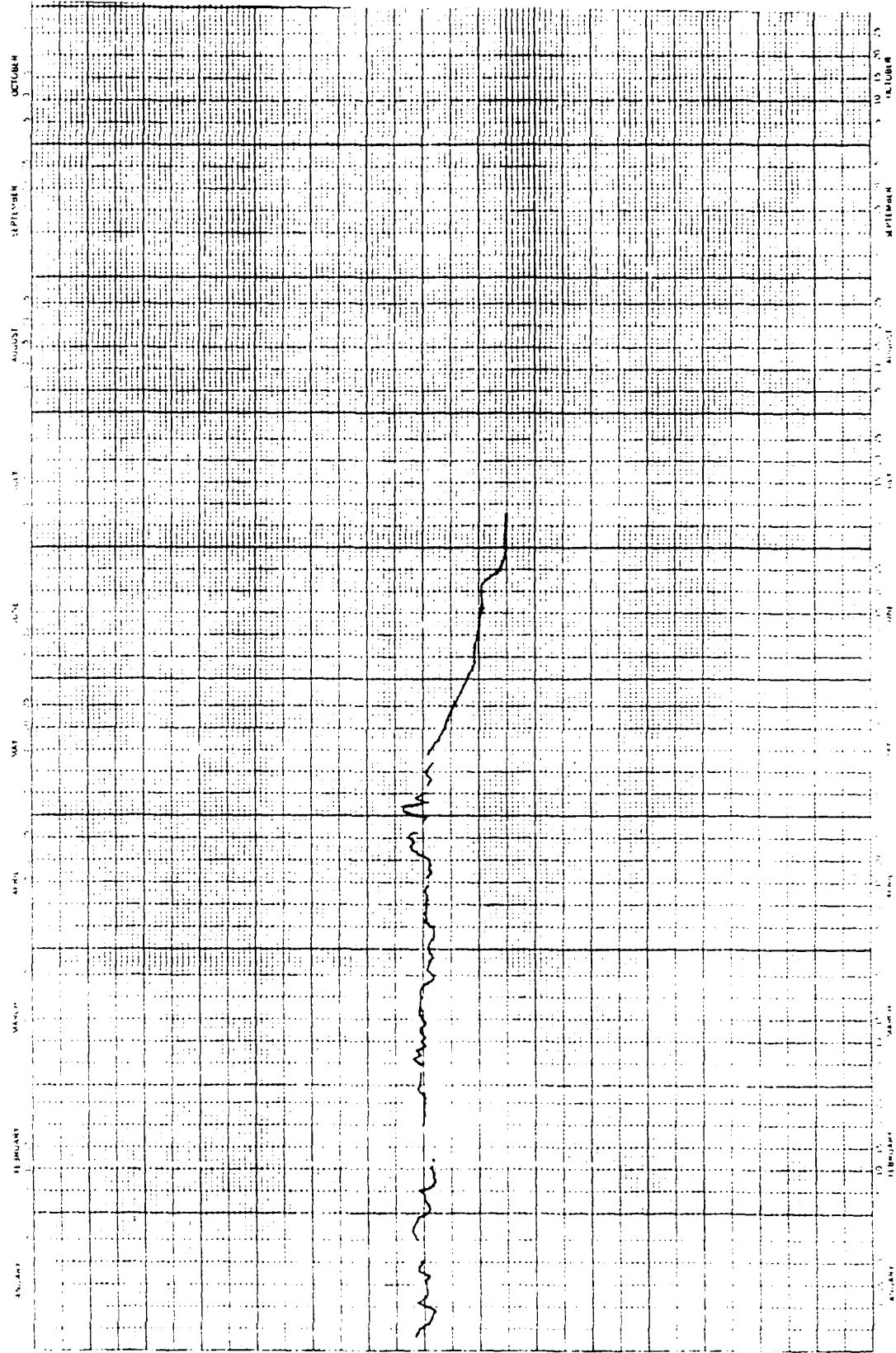
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PF 206

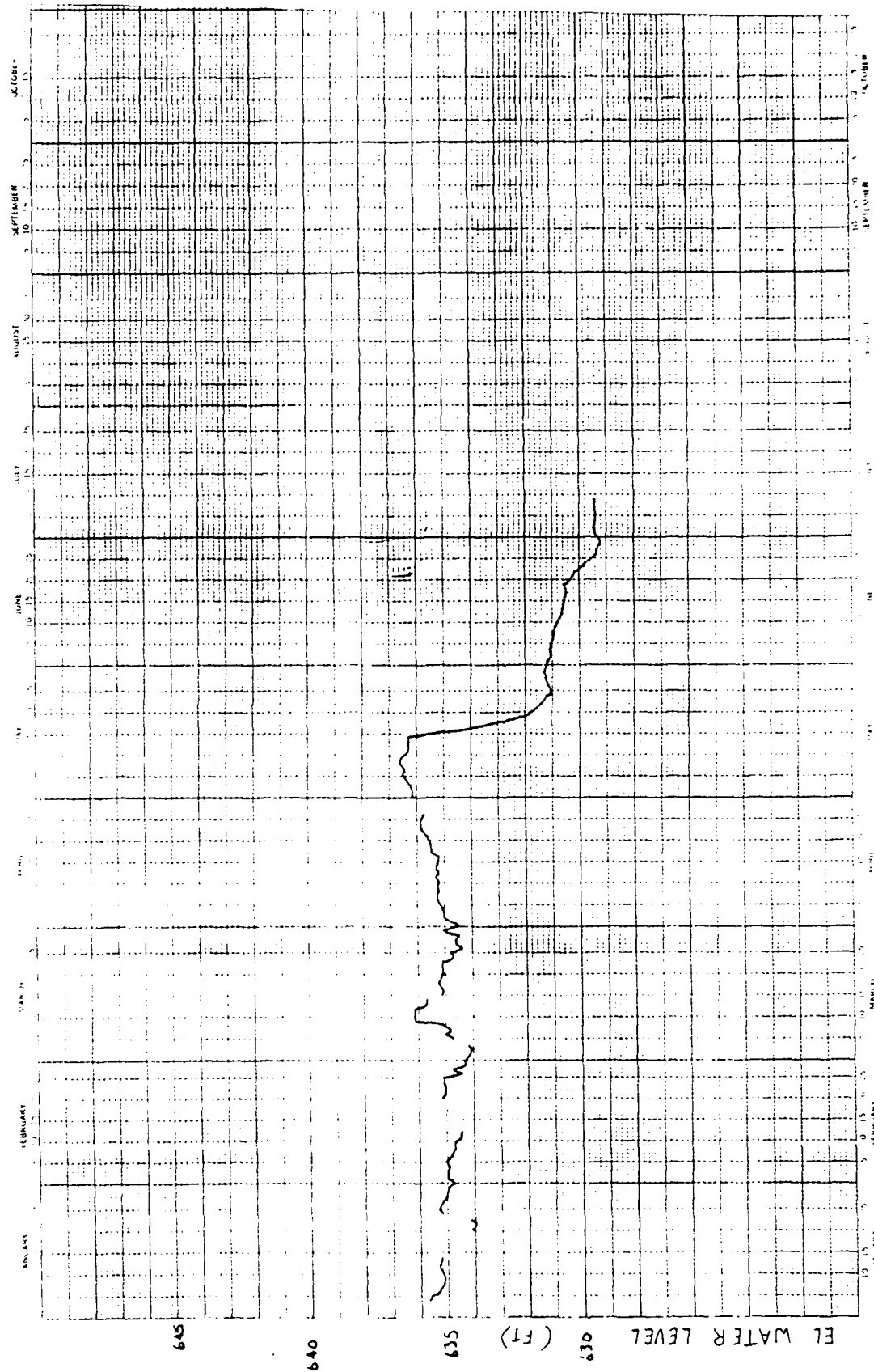
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87 EL WATER LEVEL (FT)



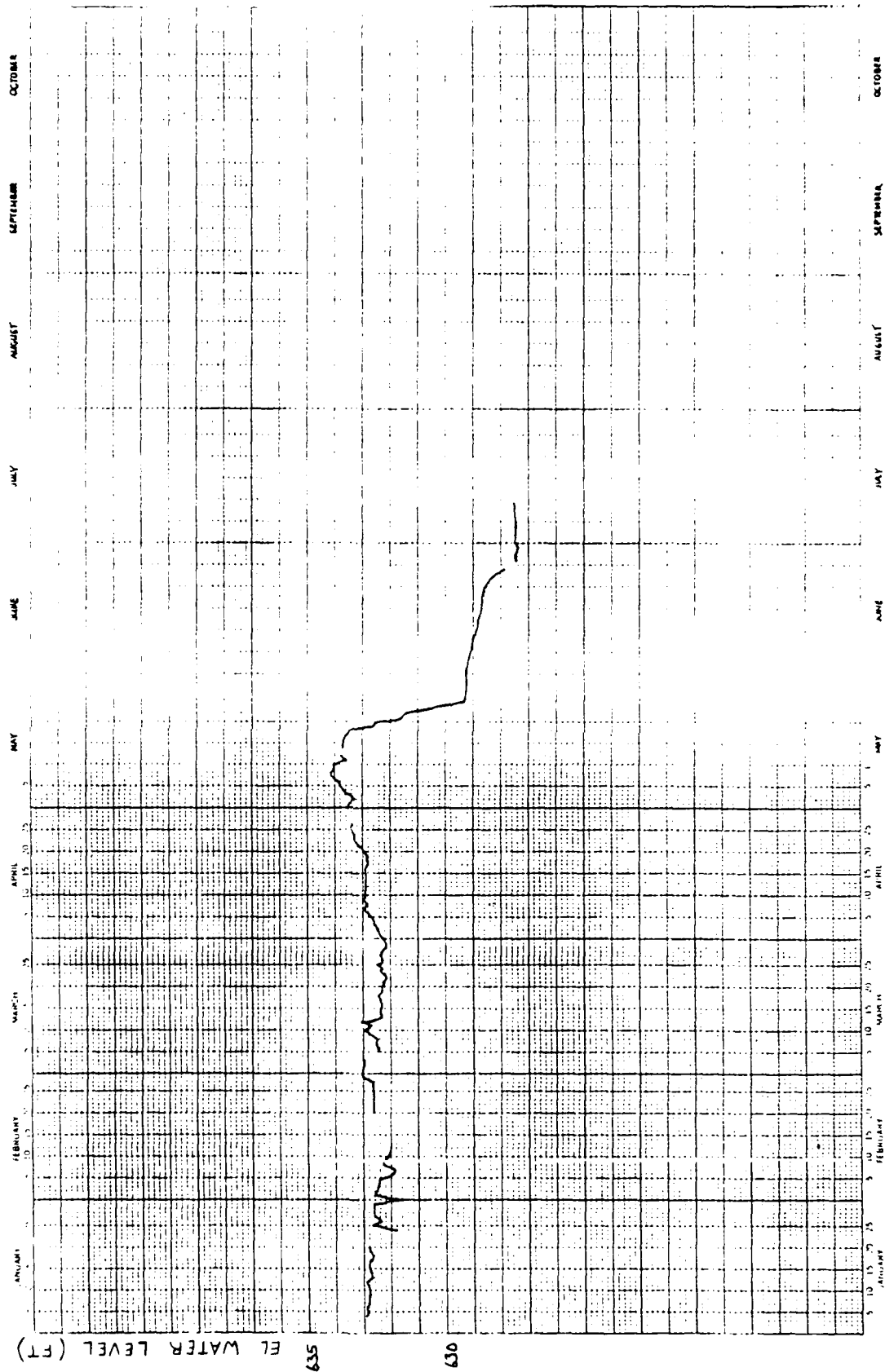
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PC 207

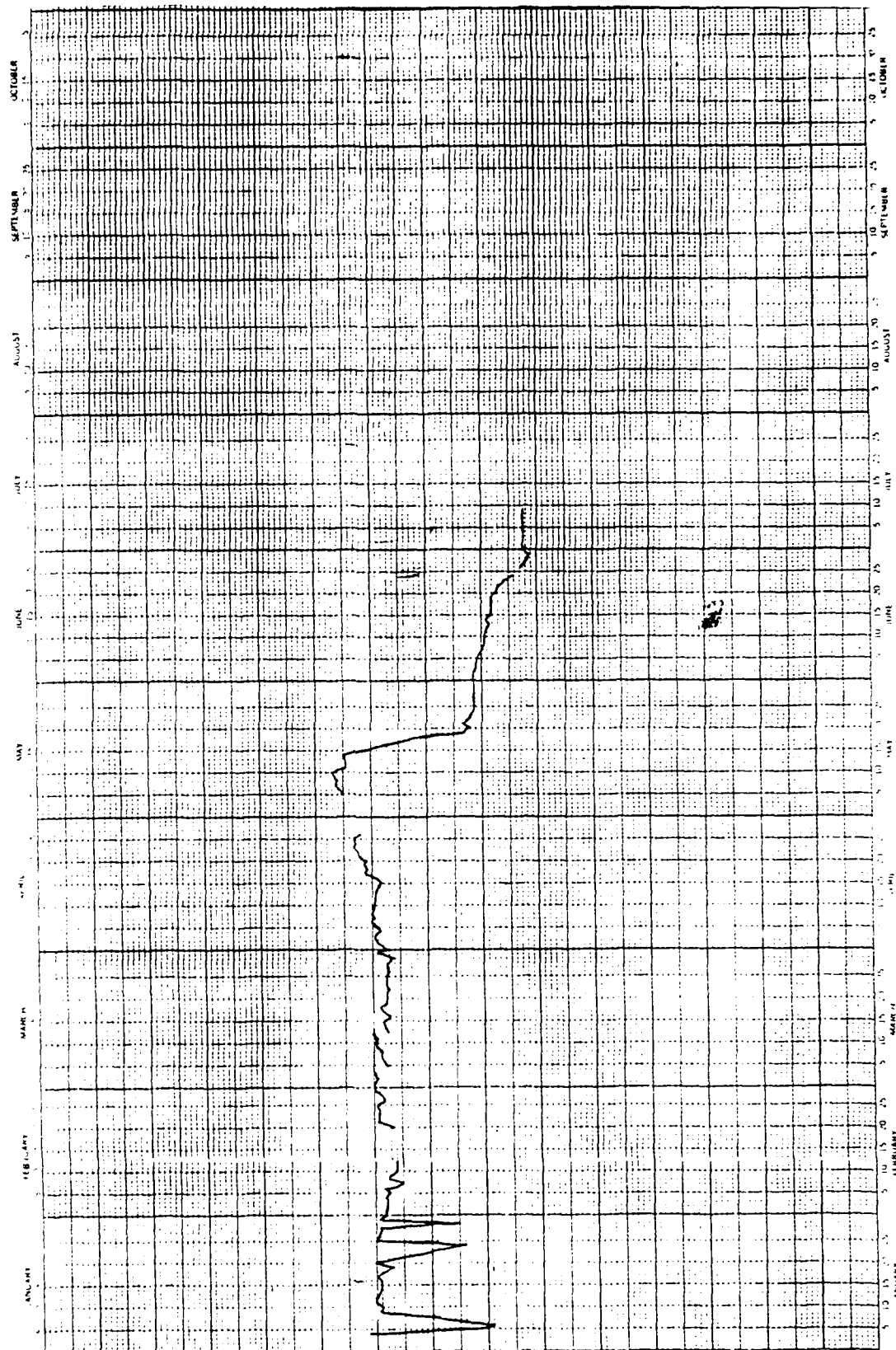
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PF 207

1964

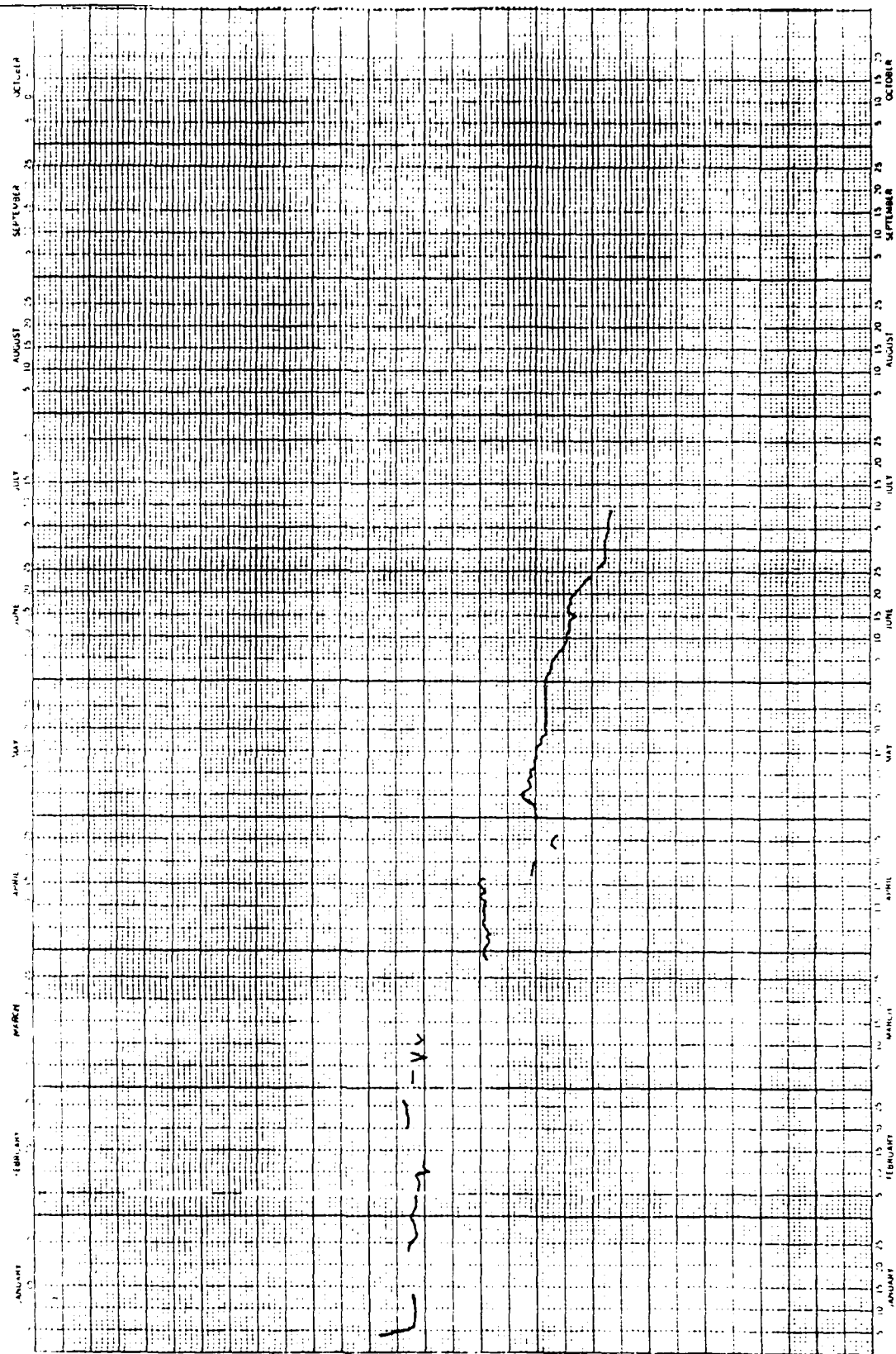
529 EL WATER LEVEL (FT)



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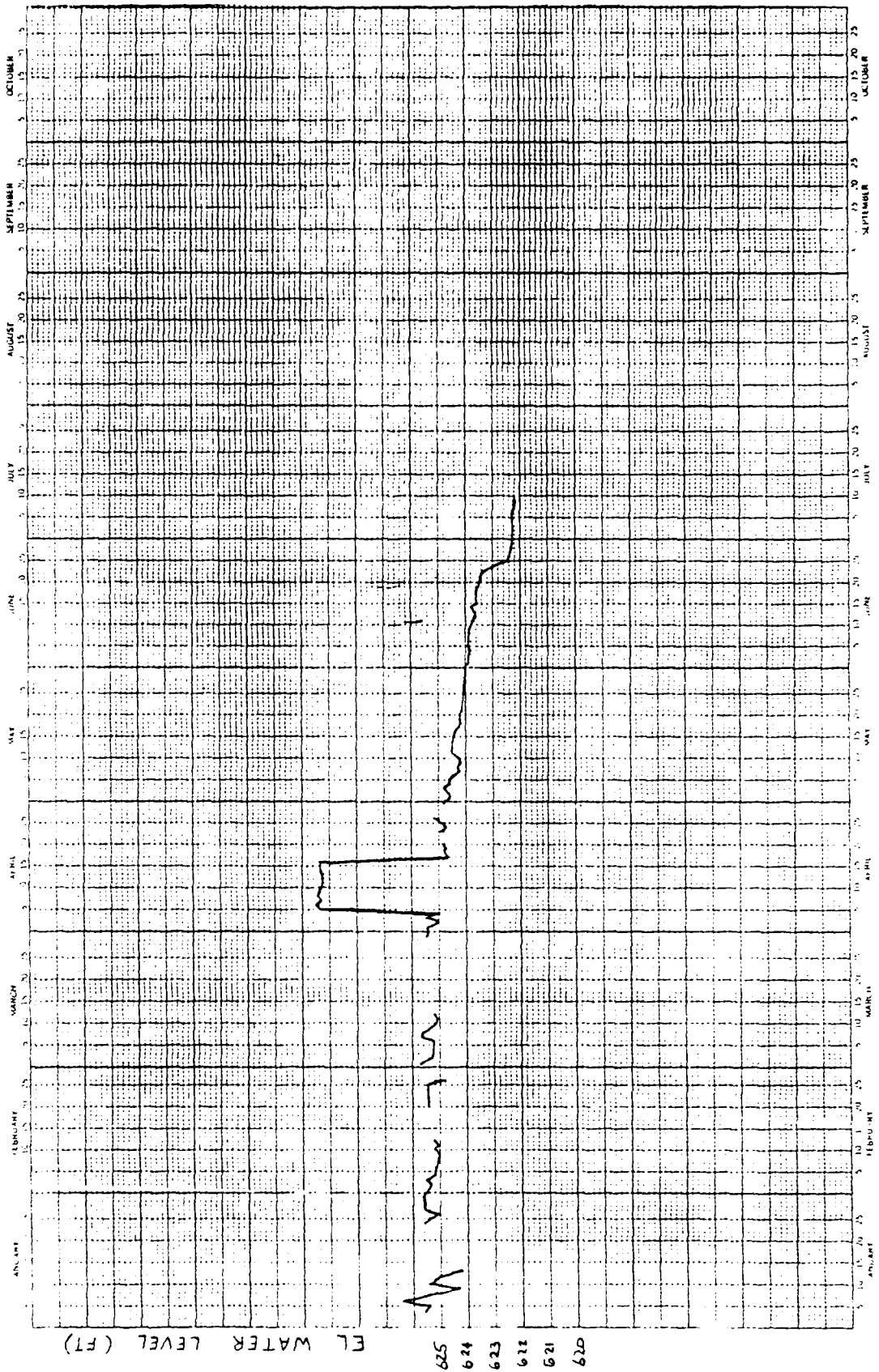
1984

EL WATER LEVEL (FT)



PE 209

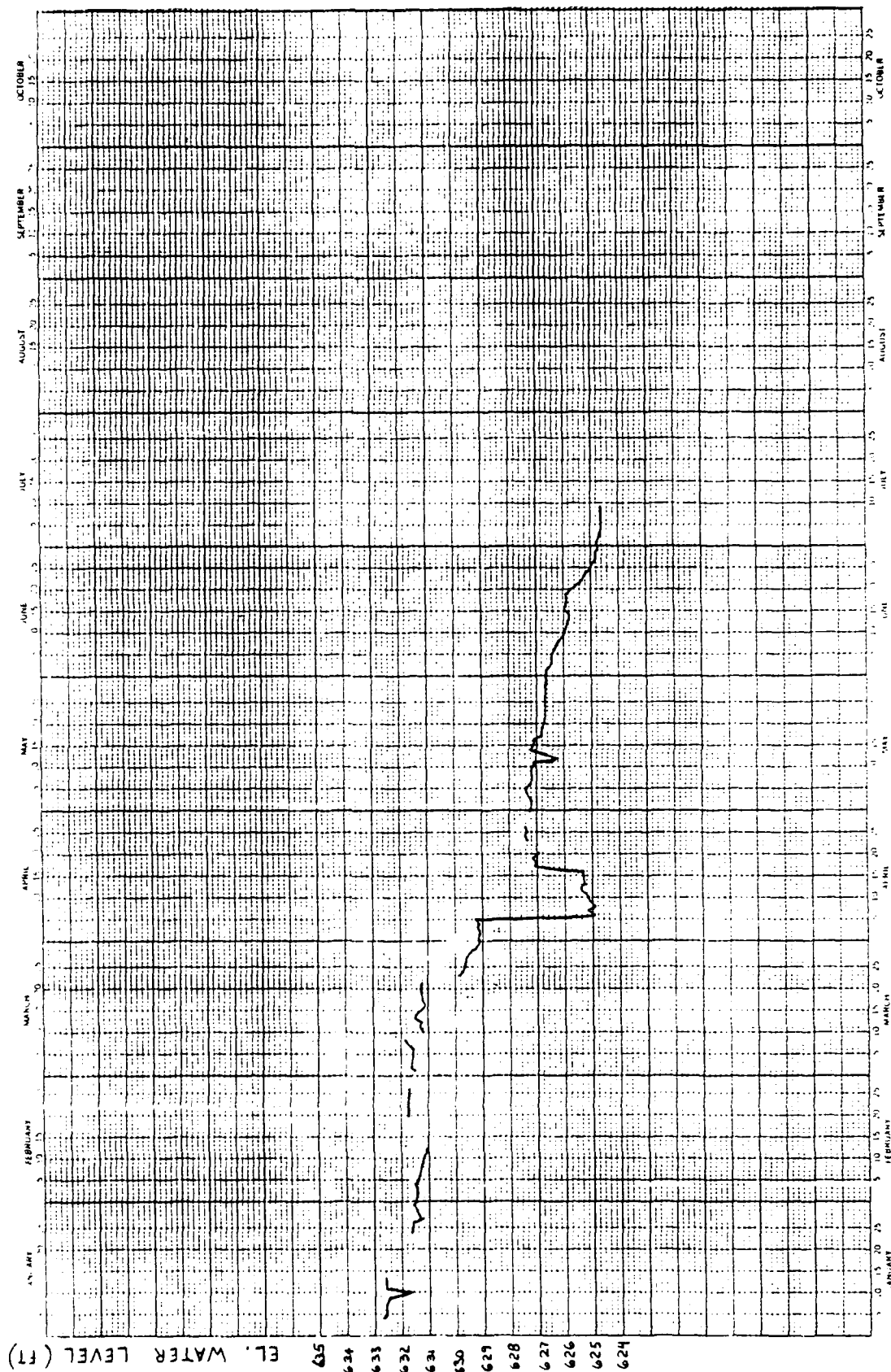
1984



K-E 1 YEAR BY DAYS & 15 DIVISIONS
McPHERSON & SONS CO. INC.

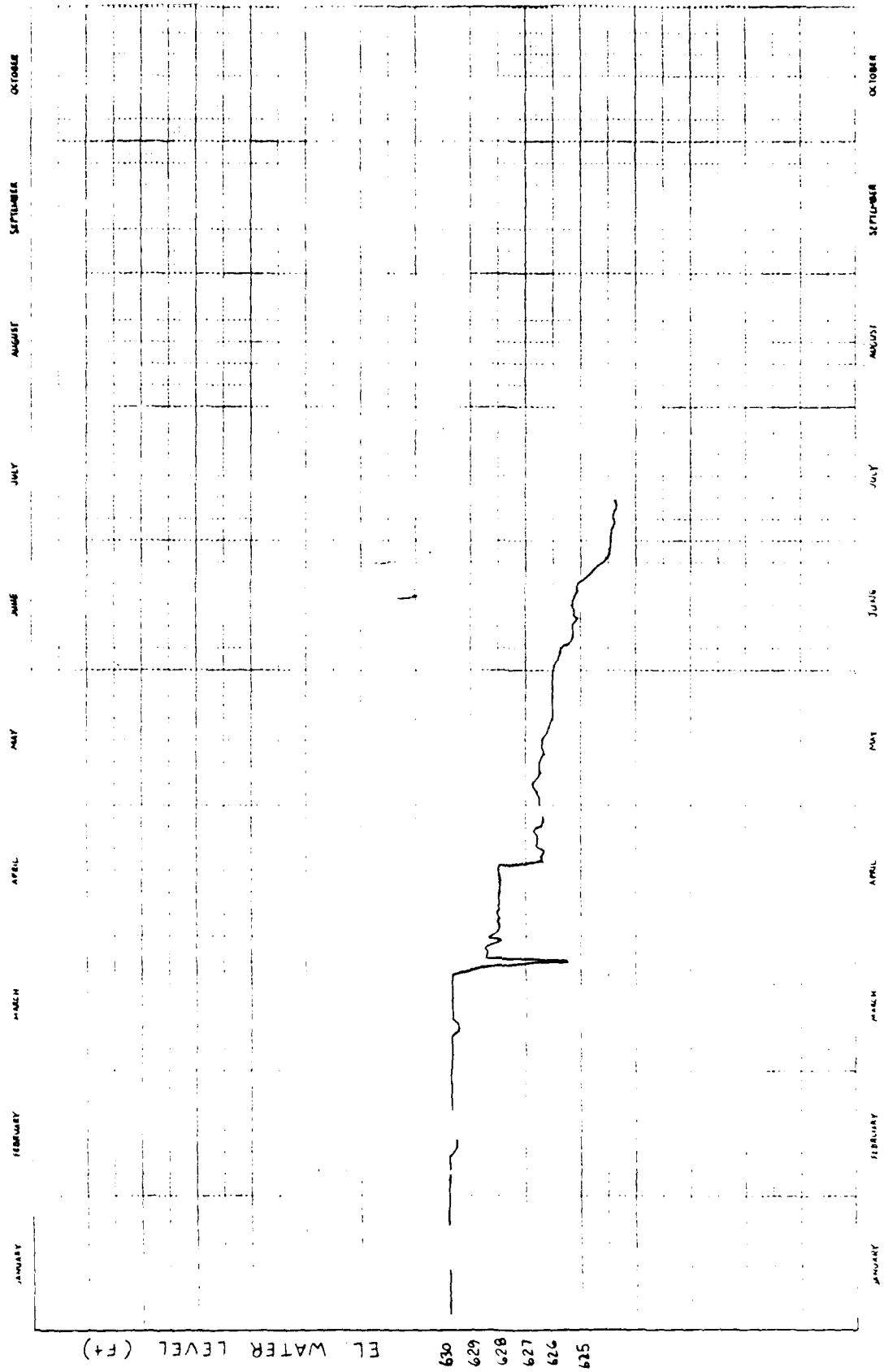
PF 209

1984



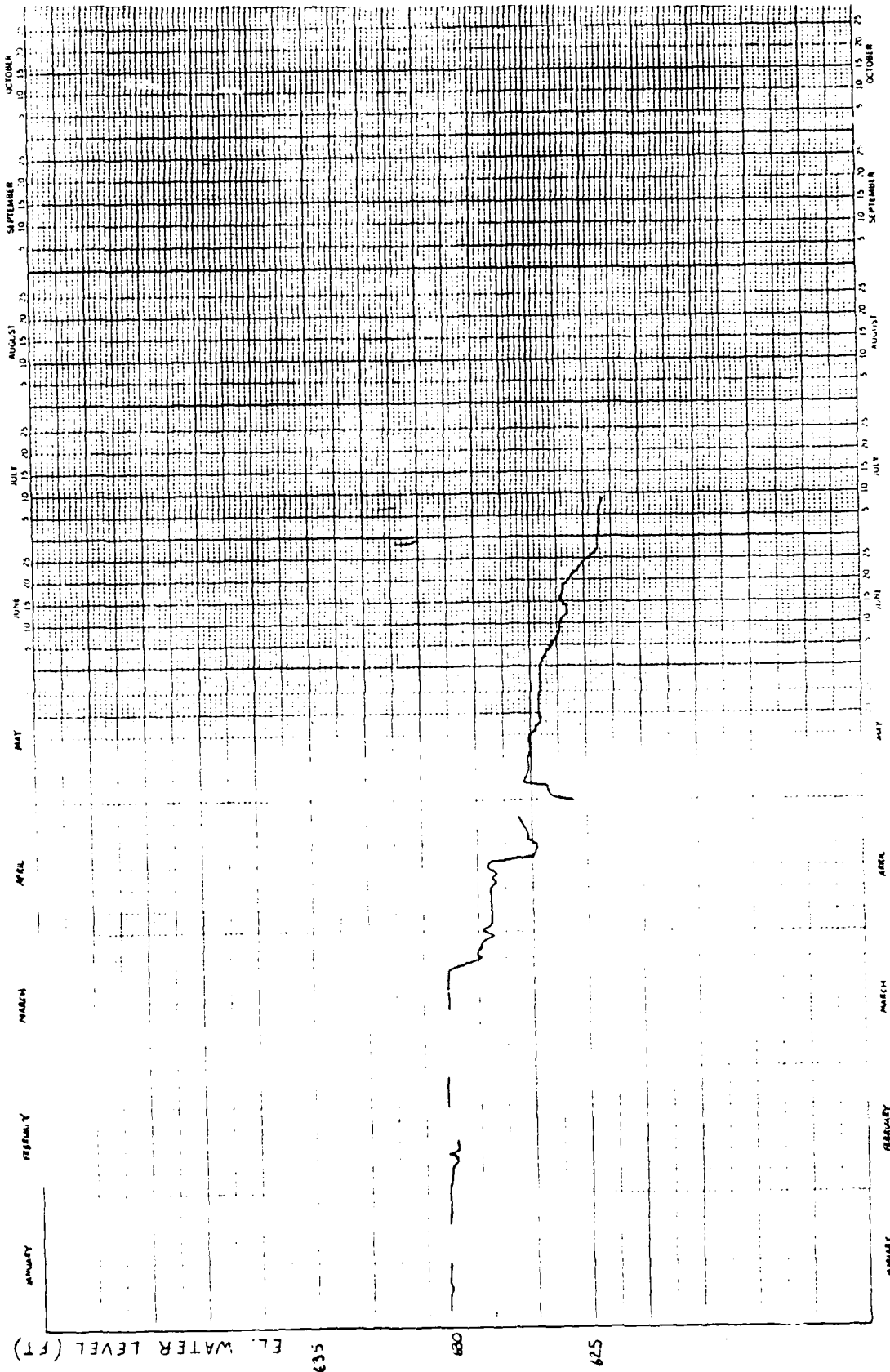
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PC 210 1981



PF 210

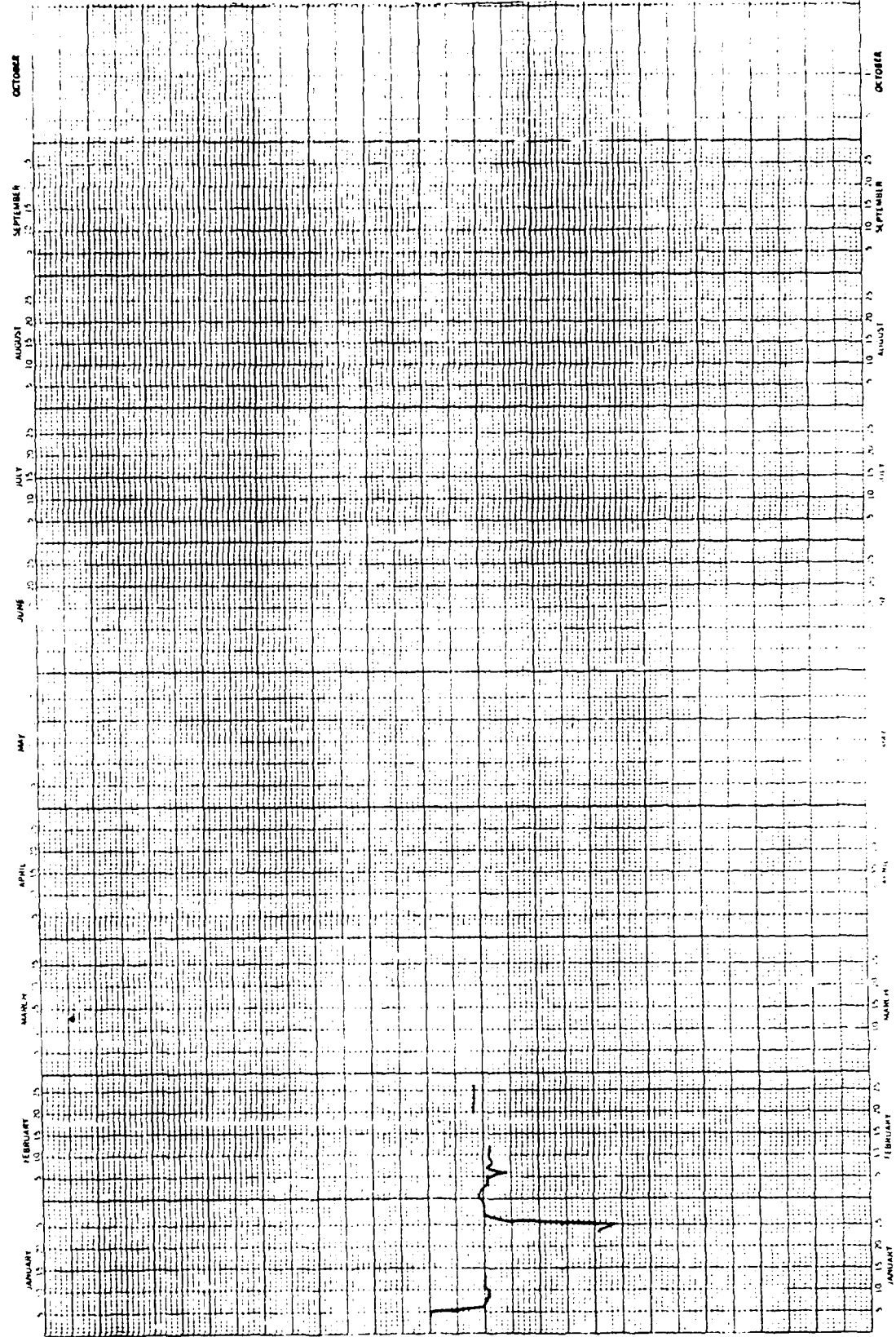
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PC 211

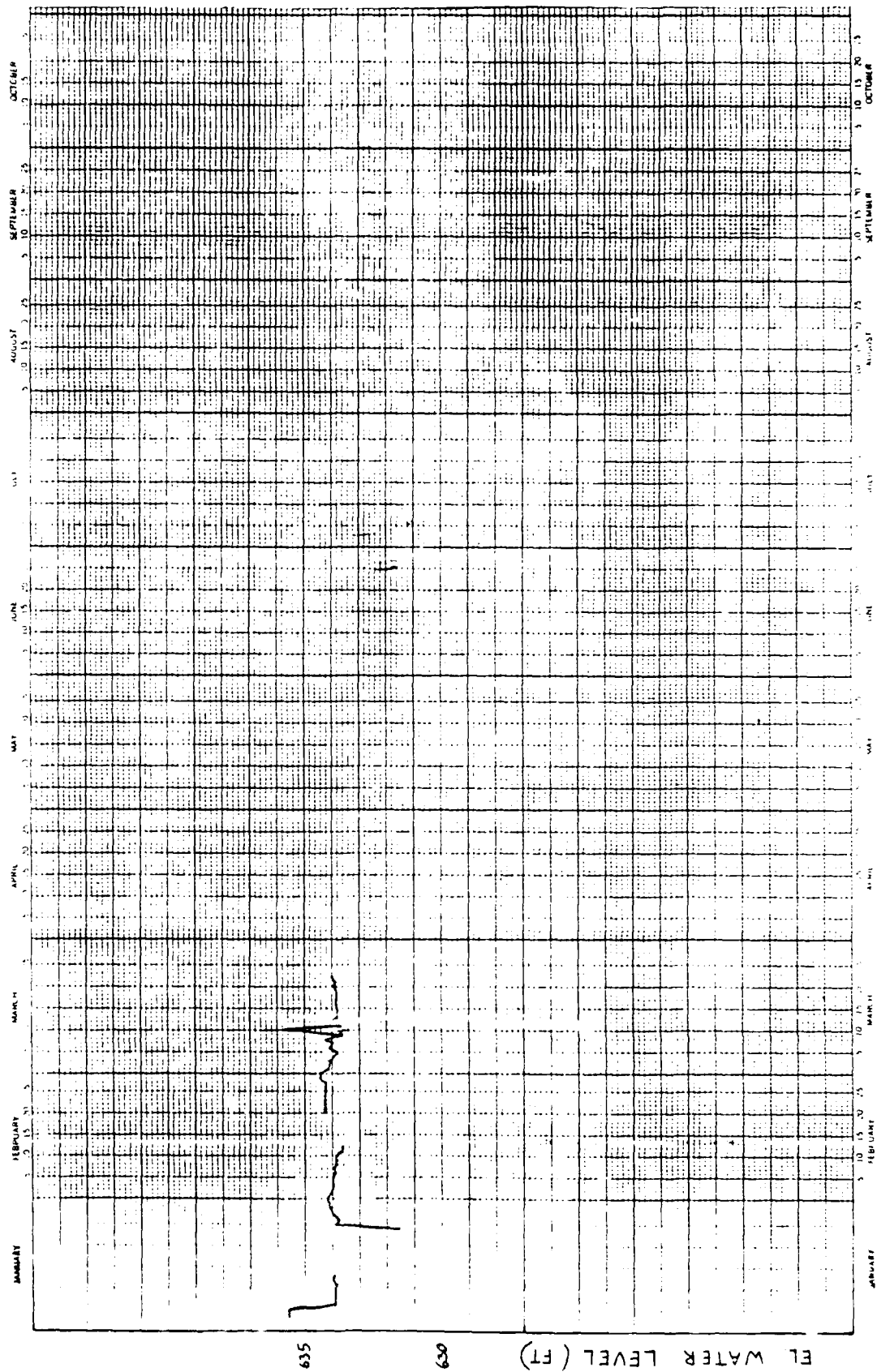
1984

89 EL. WATER LEVEL (FT)



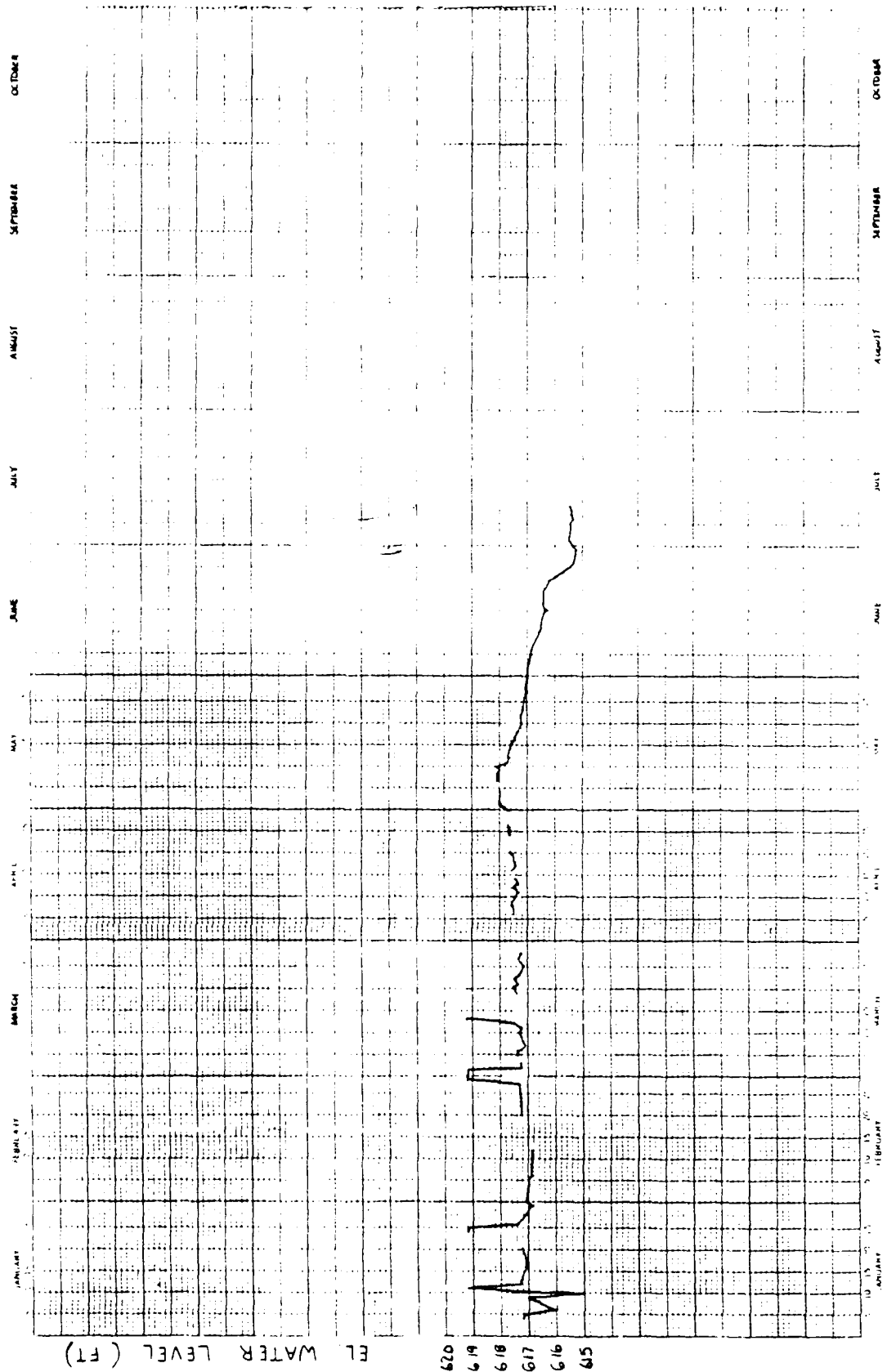
PF 211

1984



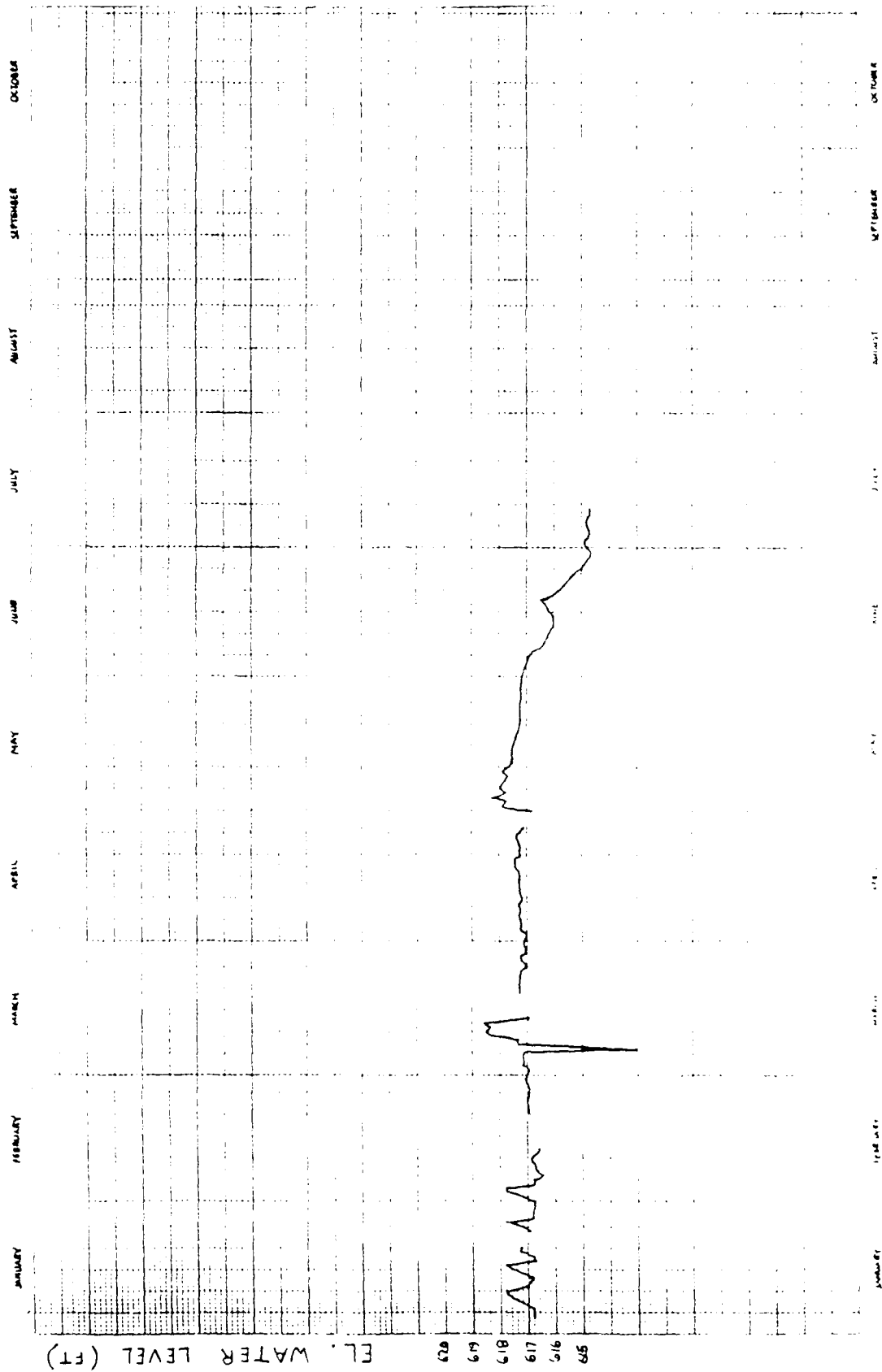
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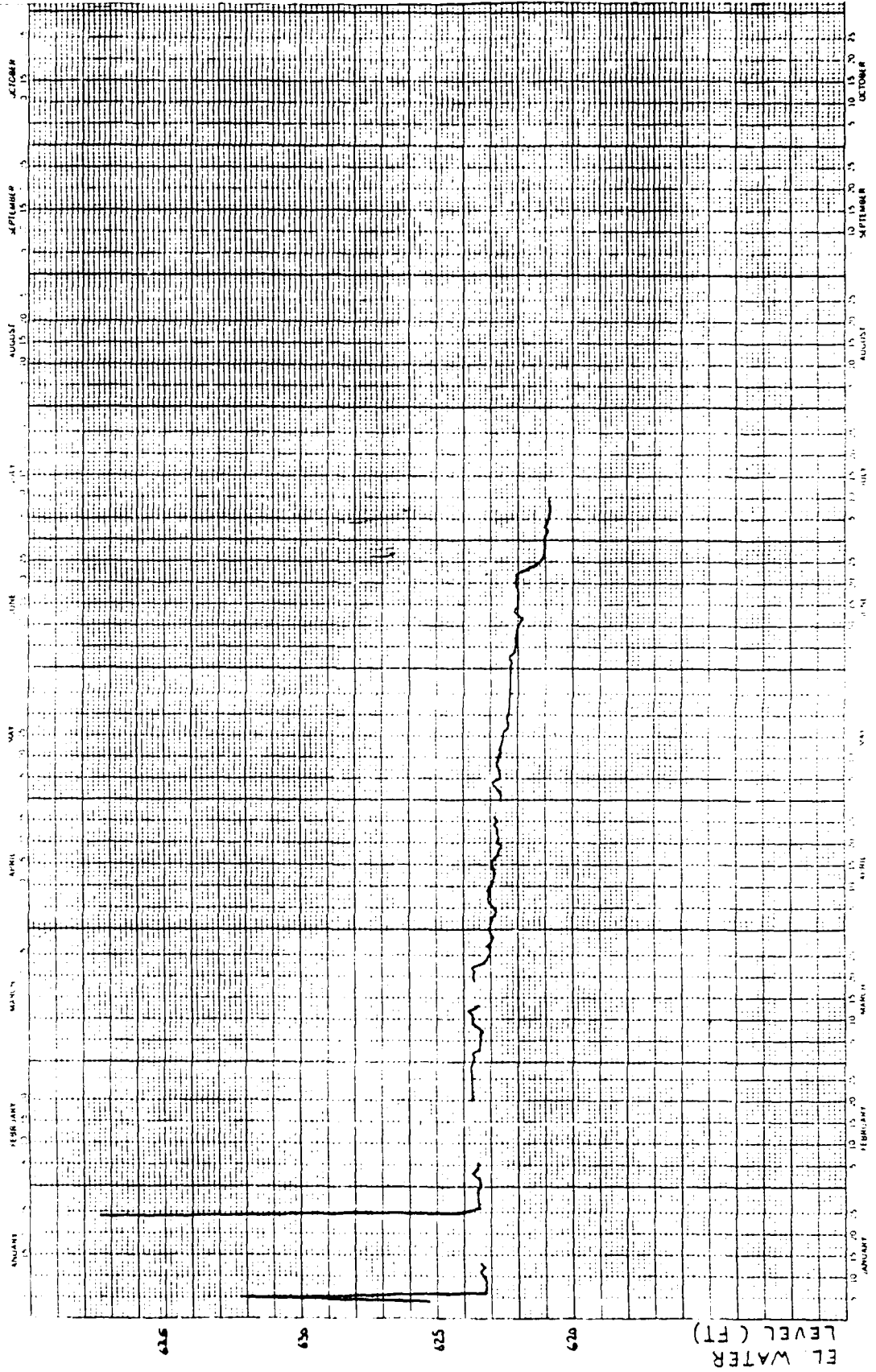
PC 213

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PC 214

1984



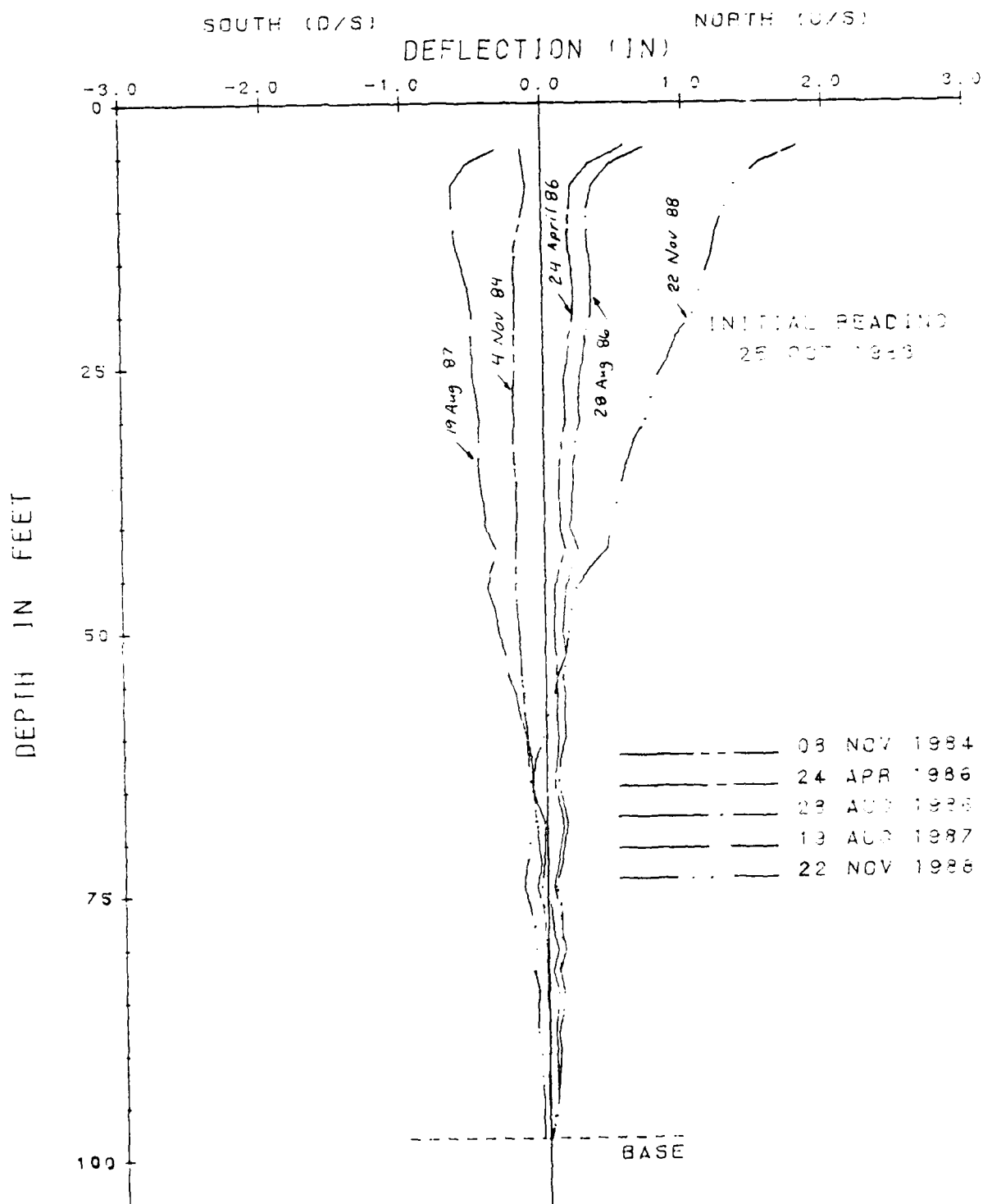
REHABILITATION OF CLEMSON UPPER DIVERSION DAM
CONSTRUCTION FOUNDATION REPORT

APPENDIX E

Inclinometer Plots

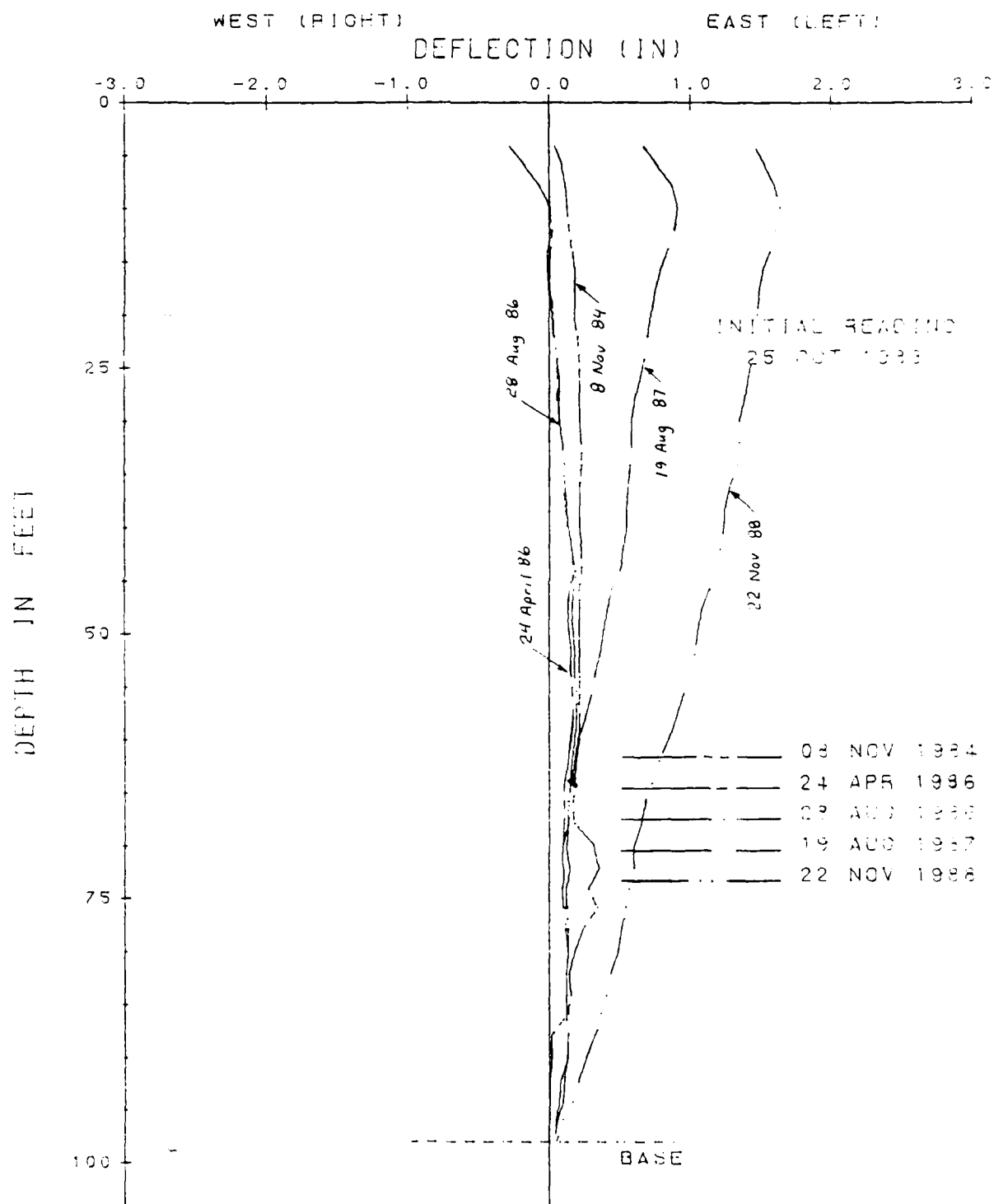
CLEMSON UPPER DAM
1U

N-S



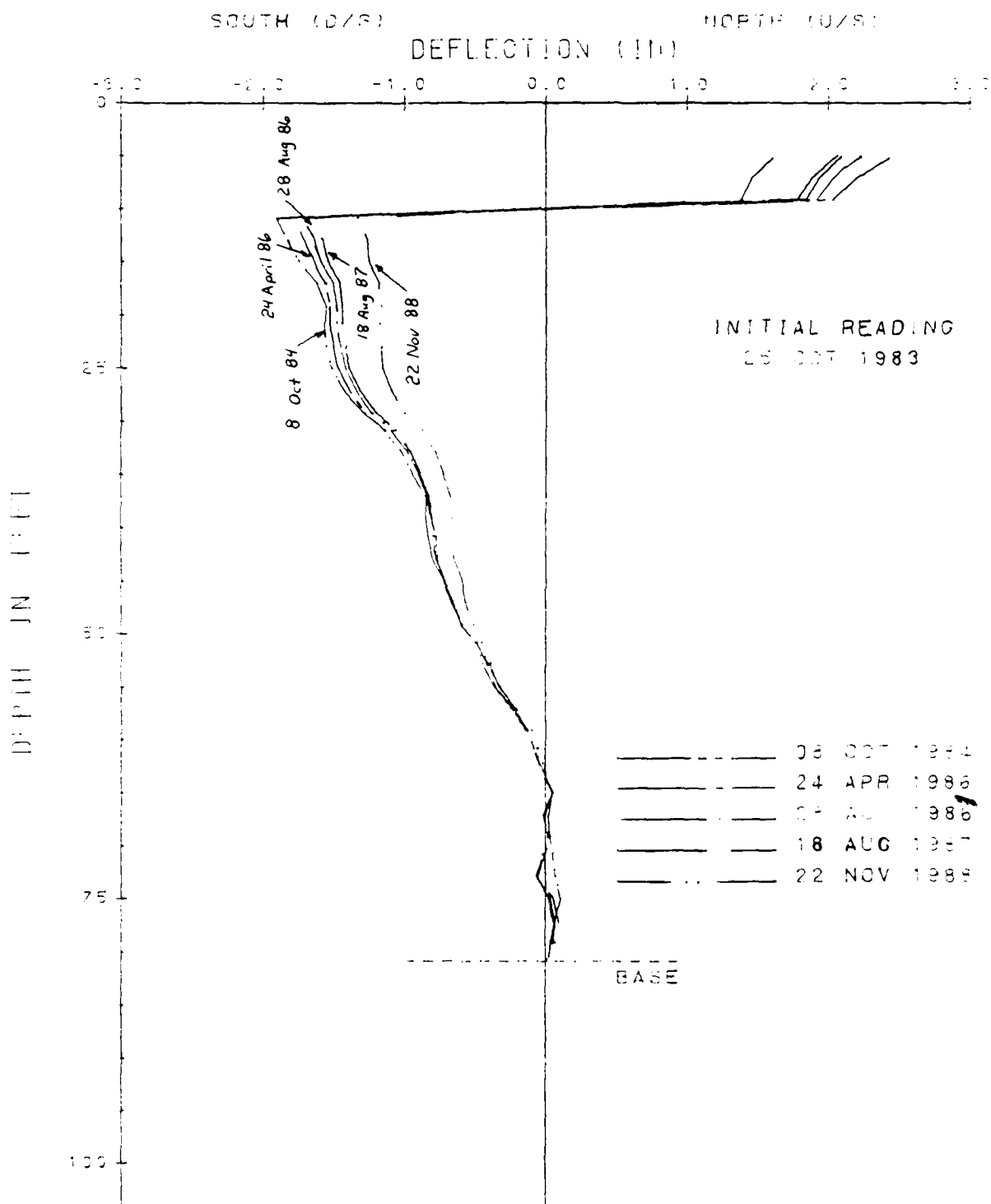
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E-W



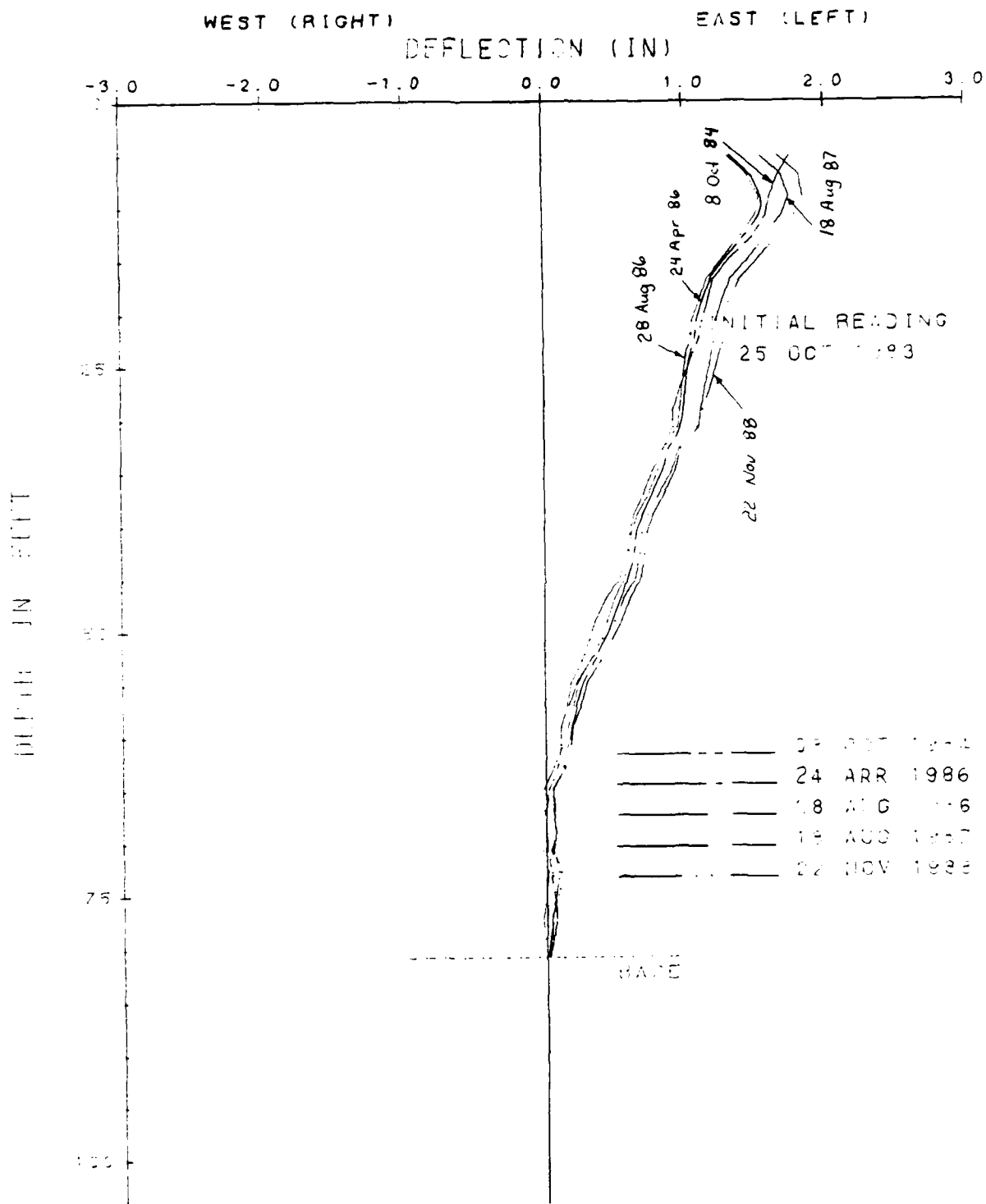
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N-S



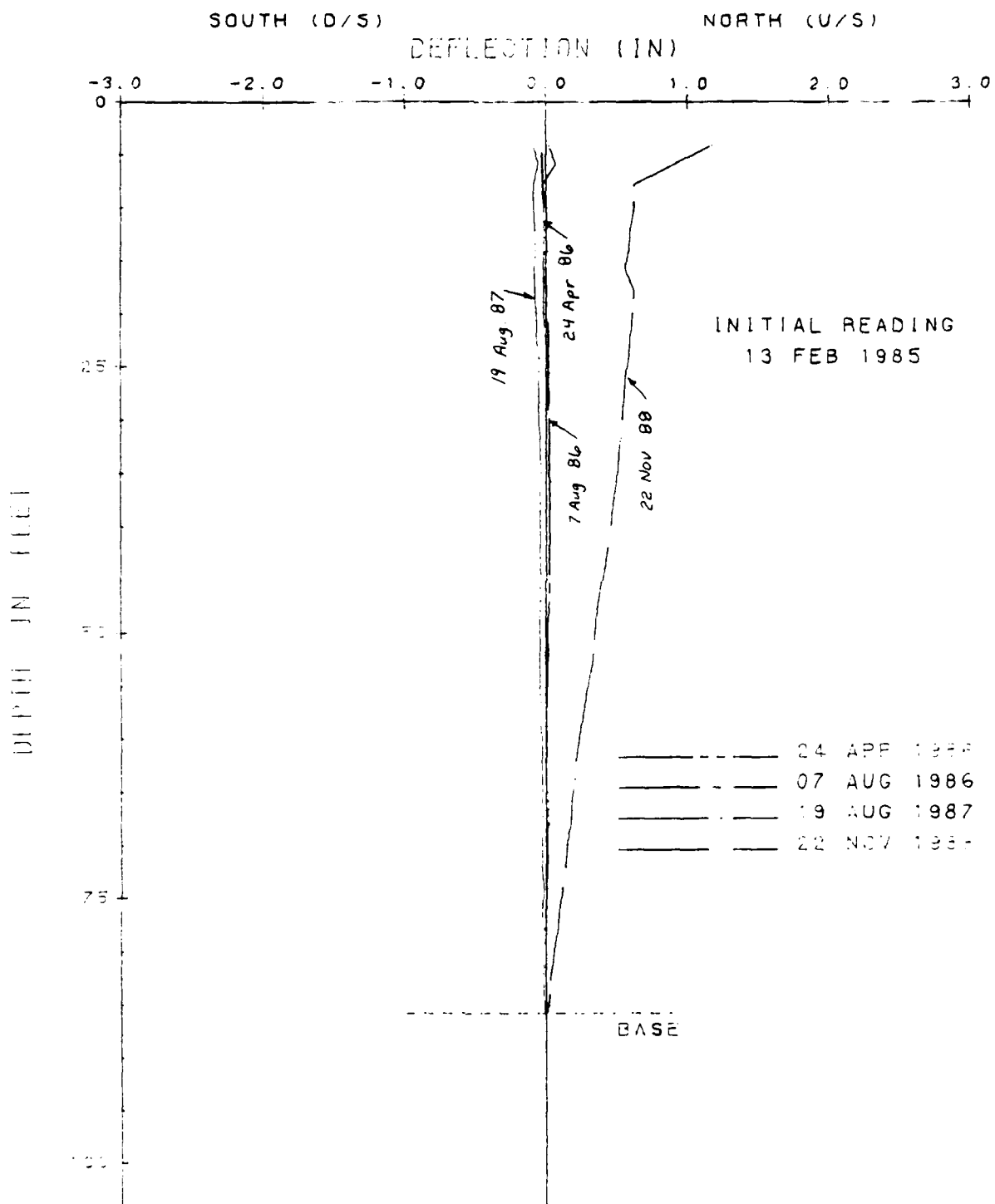
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E-W



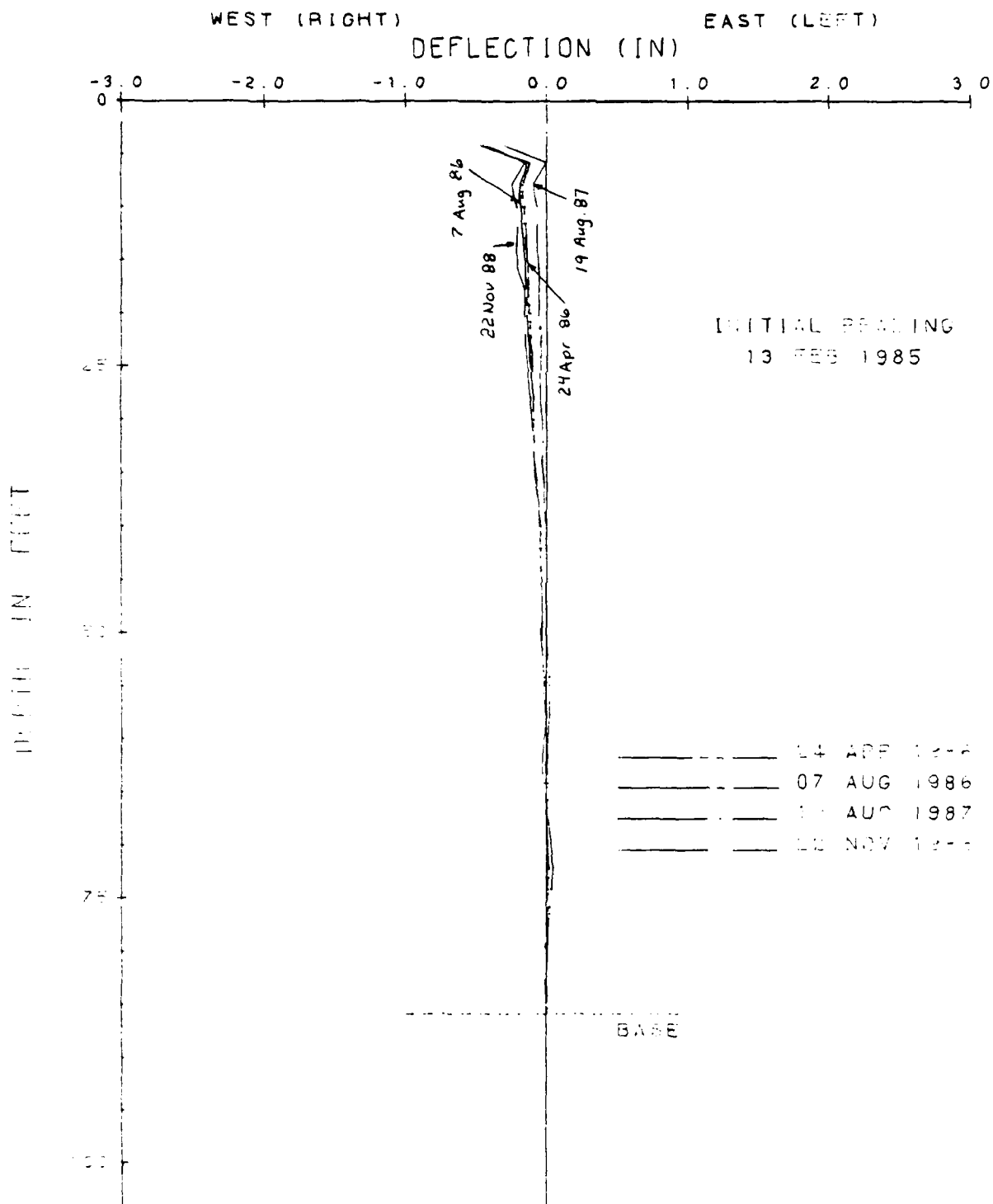
CLEMONSON UPPER DAM
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N-S



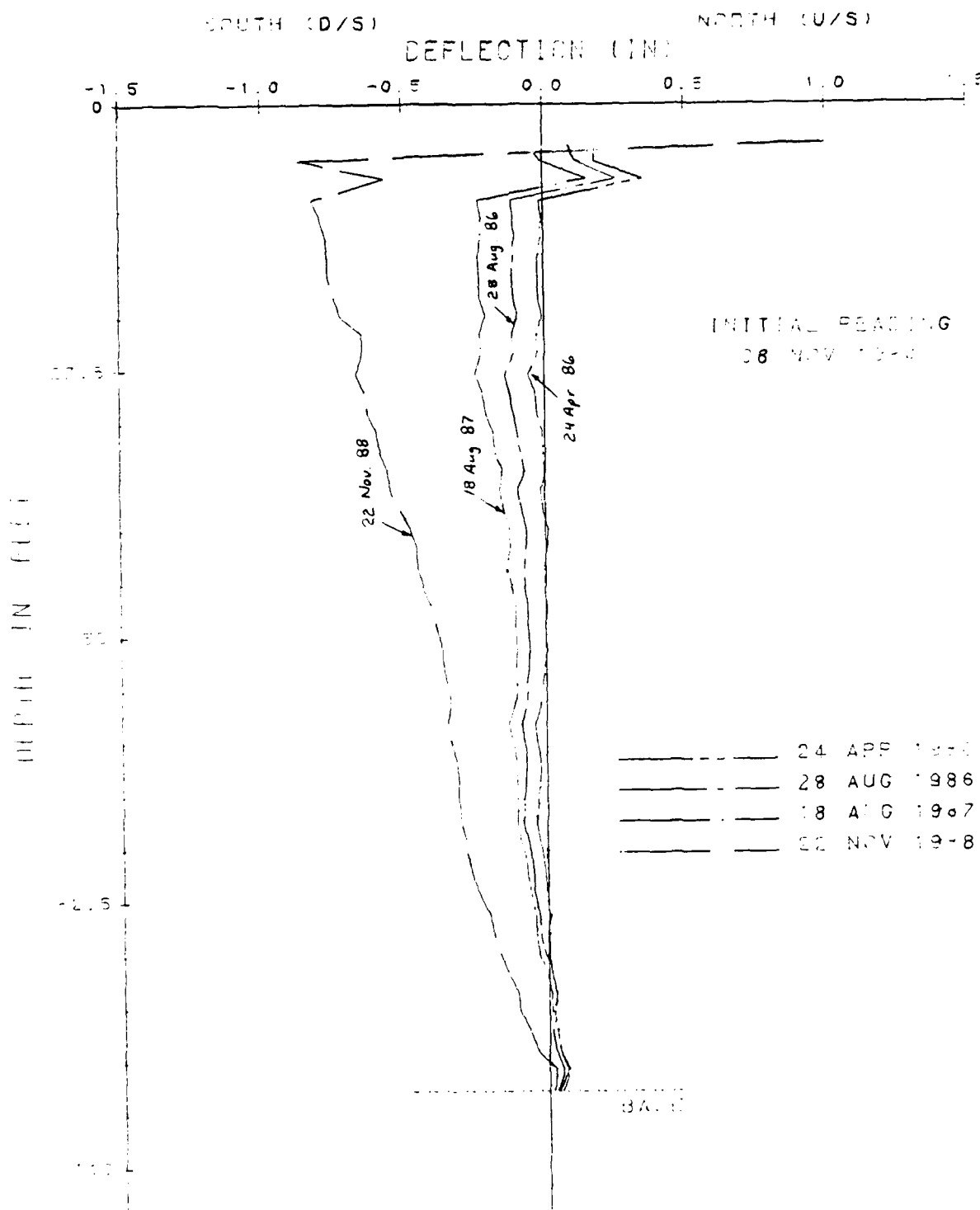
CLEMONS UPPER DAM
30

E-W



CLEMONSON UPPER DAM
10

N-S



CLEMPSON UPPER DAM
40

E-W

